THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. XVI. No. 386—19th YEAR.] LONDON, AUGUST 6, 1867. [Subscription { 15s. in Advance / 18s. Credit. } DOUBLE No. Price 1s.

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COAL. Analysis by Dr. FYFE, M.D.:—
9746 cubic feet of gas per ton of coal.
25-candle gas.
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1862.
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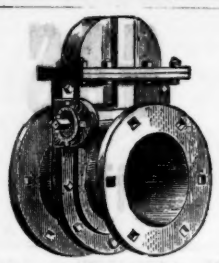

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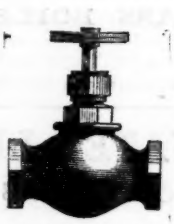

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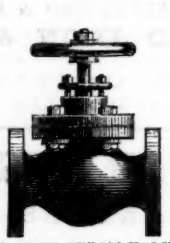
Bore.	Price.
½ inch	£0 4 0
¾ "	0 4 6
1 "	0 6 0
1 "	0 8 6
1¼ "	0 11 0
1½ "	0 14 0
1¾ "	0 18 0
2 "	1 2 6



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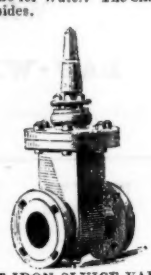
2 inches	£1 2 6
3 "	1 17 6
4 "	2 15 0
5 "	3 15 0
6 "	4 17 0
7 "	6 0 0
8 "	7 5 0
9 "	8 15 0
10 "	10 10 0
11 "	12 5 0
12 "	14 0 0



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☞ *See "Practical Mechanic's Journal," Dec.* 1, 1865; *also, p.* 711 "JOURNAL OF GAS LIGHTING," *Sept.* 18, 1866.

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NOTICES.

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The next number will be published on Tuesday, August 20, and the subsequent numbers on each successive alternate Tuesday.

Stamped copies, when forwarded by post, must be folded so as to expose the stamp; they are otherwise liable to the full postage charge for letters.

This JOURNAL has been duly registered at the General Post Office for transmission abroad.

All Communications to be addressed to the Editor, No. 42, Parliament Street, Westminster; and orders for Advertisements to the Publisher, Mr. W. B. King, No. 11, Bolt Court, Fleet Street.

TO CORRESPONDENTS.

No notice can be taken of anonymous communications. Whatever is intended for insertion, must be authenticated by the name and address of the writer; not necessarily for publication, but as a guarantee of good faith.

J. J., Leeds.—*Two candles were used by Dr. Odling and Mr. Sugg in their experiments on the gas at Manchester, and the quantity of sperm stated to have been consumed in ten minutes is the consumption of the two candles.*

C. T., Norwich.—*Your communication shall be noticed in our next issue.*

S. H.—*Stamp No. 8 is that of the meter inspector of the corporation of the City of London. The other stamp is an illegal one, and subjects any person fixing a meter stamped with it alone, to the penalties prescribed in the Sales of Gas Act.*

THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, AUGUST 6, 1867.

Notes upon Passing Events.

THE force of the old story "of a remedy worse than the "disease" will soon be realized by some of the once fortunate and now unfortunate towns seated on the banks of flowing streams. Once they were fortunate, because the stream was a main sewer which cost them nothing to make or keep in repair, and yet saved the inhabitants an immense deal of scavengering. But public opinion has at length come to consider that cleaning a town by polluting a stream is penny wise and pound foolish. The legislating part of the nation has grown critical in its water drinks. What began on the Thames is being pushed forward on every stream in the kingdom, at a time when water-closets are becoming common in villages, and small towns are scientifically sewered. As a matter of course, a new and puzzling problem is presented to local and village authorities in the question of what they are to do with their foul water. London began by trying to intercept the liquid and "slab" pollution of the Thames all along the metropolitan area. But soon it became evident that this was only a half measure, and our anti-sewage crusade has been pushed on until it has reached Oxford. What Oxford will do when the time comes for the law to seal up all the sewers that now disgorge their filthy contents into the stream that feeds the Thames it is impossible to say. Necessity is the mother of invention. At present the machinery for enabling a town, still more for enabling a village, to deal with its surplus sewage is most imperfect. It will, we suspect, be soon found that towns of moderate population can no more deal profitably with sewage than with any other manufacturing or agricultural operation. It will be worth while to form one or more companies with trained officers to undertake the disposal of sewage, just as companies undertake agricultural land drainage and other substantial landed improvements. It will be found that, in a majority of instances, sewage cannot be disposed of to advantage. Towns will have to pay for getting rid of a nuisance, but they will find it cheaper to contract with a company than to farm themselves. But to enable either towns or companies to deal successfully with sewage, compulsory powers of purchasing or leasing land for the purpose must be freely granted. We know very well what to do with sewage on sand, chalk, or any porous soil; how to treat it on clay still remains a problem—that is, how to pour it on clay without creating a nuisance. At the discussion on Mr. Bailey Denton's paper, at the Society of Arts, reprinted in our last number, Mr. Rawlinson propounded the extraordinary theory that sewage might be purified and profitably applied on undrained clay—a proposition too ridiculous to be accepted by any observer with the use of his eyes and his nose. But even well-drained clay presents great difficulties, not yet entirely overcome, although no doubt to be overcome by time, perseverance, and necessity. Let him who doubts the difficulty go to Mr. Rawlinson's favourite example at Norwood—and take a smelling-bottle with him. In villages, we suspect that the inhabitants, when cut off from their main sewer—the nearest river—will have to go back to the ancient open privy, with some modifications. If, in country places, these were constructed with a view to the contents being applied to the land, they need not be sources of either danger to health or nuisance. We have no faith in the general application of the earth closet patent, although the theory is sound. It is too mechanical, and requires too much careful attention from a class of people who cannot be trained to attention to such matters. But it would be less difficult to attach a bin of dry earth and house ashes to each garden-house, and to take pains to enforce the necessity of largely employing dry material, instead of water, which only aggravates the difficulty of profitably employing human manure. These are nasty subjects, but they will have to be discussed again and again in the course of the next few years.

Mr. Fawcett has introduced and withdrawn his Bill for limiting the time and compelling the education of agricultural children. It was a measure that would not work, for it was founded on a plan of alternate day labour. But the necessity of a measure to save agricultural children from the greed of parents and the tyranny of employers, and to force on the poorest an elementary education, is not the less pressing. Some of the speakers in the House of Commons complained, with good reason, of the silly, superficial character of much of the education given in village schools. But the fault lies chiefly with the employers of labour—the farmers—who, whatever they may say at public meetings, under pressure of newspapers, dislike education as a body, and look back with pleasure to the days when schools were few and newspapers unknown in cottages. The consequence is that village education is conducted on the pattern approved by the parson and the squire's wife. They are not to be blamed; they act according to their lights. So you find the future ploughman, cattle herds, shepherds, hedgers, and ditchers, crammed with knowledge at once uninteresting and useless. Lessons in the geography of Europe and Palestine are given, while the geography of the county is neglected. We have often thought that an Ordnance map of 20 miles round the school should hang up in every school-house. Then again, why not have

and read popular descriptions of domestic animals and agricultural implements? The little yokel who can tell you all about the camel cannot tell you the difference between a Leicester and a Southdown sheep, and has never heard of the origin of the Short-horn. We want good books for agricultural schools, as well as time to read them and men to teach them. When we look at the reading-books of a village school, we do not wonder the boys long to desert to the labour of the fields. Mr. Fawcett feels rightly; he is naturally disgusted with the disclosures of the commission on children employment, but in future efforts he must never forget that the most important part of the education of a labourer's child is that which teaches him to get a living. When education is so conducted—and it may be so conducted—that labourers children grow into better labourers in consequence of the quality of the education they receive, farmers will support the school system to which they are now, if not opposed, indifferent.

The House of Commons has been discussing two questions, in considering which the "hard and fast lines" of political economy cannot be absolutely maintained. Mr. Monsell began with the case of Irish railways, which have a peculiar claim on legislative care, because planned and executed under Government control. A Government commission pointed out the direction in which they ought to run, and Government authority imposed a 5-feet gauge on Ireland, which is a permanent tax on the supply of rolling-stock. Irish railway directors cannot purchase from the established English and Scotch pattern. At any rate the Irish railways are the dearest in fares and rates, and the most inconveniently managed in the United Kingdom. It appears that in 1865 there were 1838 miles of railway in that island, with a gross income of £1,700,000 a year, managed by 35 boards of directors; while one board and one staff manages the London and North-Western, with a gross income of £6,000,000. If anything in the way of conveyance is to do Ireland good, it must be railways conducted on the plan of the Belgian railways—as few trains as possible daily, at a speed seldom exceeding 15 miles an hour, with fares for passengers and rates for goods brought down to the lowest possible point. To do this the station accommodation must be reduced to the simplest limits except in large towns, and the duties of signalmen and pointsmen, where of an ordinary character, performed by pensioned veteran soldiers, or even by old women. When the fares are reduced to even the Belgian rate for third class, it must not be expected that for some years a very great increase will take place in the passenger traffic. It must always be remembered that beyond one day in a week a purely rural population has seldom time, money, or inclination to travel for either amusement or speculation. Goods rates stand on a different footing, and it is impossible to say how far the resources of such a country as Ireland may be developed, until the lowest possible rates have been established for every kind of produce and of fuel. A very low rate of passenger fares would encourage a class of English pleasure travellers in summer and autumn, whose money, at any rate, might be very useful to the country. But all hopes of serious reduction in fares and rates rests on the assumption that a transfer to Government would produce such an economy of management that the reduction might be effected without calling for a subsidy. This all important point remains to be proved. It is satisfactory to find that members on both sides of the House are inclined to consider the question fairly, without being trammelled by any abstract theories. Irish railways seem to present a subject in which something substantial may be done for Ireland. Mr. Monsell's plan is to buy up the dividend-paying lines of Ireland at 20 years purchase, and preference shares at 22½ years purchase, which would cost at that rate about 19 millions and a half, the interest on which would be, at 3½ per cent., £634,560, and, as the net produce of Irish railways was £900,500, the Government would have over a quarter of a million of revenue to apply to the reduction of rates and fares, besides a saving of from £100,000 to £120,000, to be obtained by the amalgamation of all the railways under one management. Mr. Monsell also expects considerable saving under the head of working expenses. With respect to management, it was proposed to fix the rent at the interest on the cost, and accept the tenders of lessees who offered the greatest reduction of fares and rates, and the greatest accommodation to the public. The Government, in reply through Lord Naas, promised to introduce a Bill which would give power to make a thorough investigation of the condition of railways, and this would enable Parliament to ascertain the exact sum required if it should be thought advisable to purchase the Irish railways. Mr. Laing and Mr. Gladstone both spoke in the tone of statesmen who felt that something solid must be done, in order, if possible, to benefit and conciliate Ireland. Mr. Gladstone said that "we had for generations been endeavouring, by the application of public money, to stimulate the industry and enterprise of Ireland, but this had been done by driblets with partiality and with great inequality of application, producing no extensive benefit, but creating much local dissatisfaction. But whatever was done ought to be done in the face of day, and ought not to apply to one portion of the country or to one class of the country more than another. He knew no better way of conferring benefit on Ireland than by facilitating and cheapening railway conveyance." This is common sense, but even when the idea is accepted, the difficulty of management remains. We cannot see how a Government Commission could possibly work the Irish railways, even experimentally; the commission would live between two fires, or rather between overwhelming pressures, both worked by parliamentary influence. First, the pressure for patronage. If they put competent Englishmen into posts of confidence, a national cry of indignation would arise; if they chose Irishmen, they would be overwhelmed with pressure to appoint political friends. On the other side, every village would want a station, and every district to have passengers and goods carried at the expense of the nation. Where is the railway director to be found to conduct a business so difficult—to work economically with the tools of party patronage?

The other question where political economy was again at fault was the communication with India. For years we have been in the hands of the Peninsular and Oriental Company, which, subsidized by Government, has done the postal service well, and introduced a degree of celerity in our communications with the East far beyond the expectations of the public when Waghorn first demonstrated the possibility of an overland route. At the same time, like all subsidized monopolies, the company did not give unmixed satisfaction to their customers. The papers have continually contained complaints of the high fares and treatment of passengers to and from India. It was quite impossible to set up a British rival company, because the Peninsular and Oriental had all the principal coaling stations, and, besides, no company could live without a subsidy. However, some time since, the French Government set up, on Imperial considerations, a steam-packet communication with India, China, and Japan. This company, the old *Messageries Impériales*, which conducted the diligence traffic before railways superseded those lumbering conveyances, was assisted with a large sum in hand of cash, besides an annual subsidy of 20s. a mile. The Peninsular and Oriental gets only 4s. 6d. a mile. The consequence is, that the ships of the French company, which are extremely well managed, get a great many passengers and a large share of the freights of which the English company once had the monopoly. So the Peninsular and Oriental has fallen from its high estate, and pays very low instead of very high dividends, while in possession of a fleet of 84,000 tons and 20,000 horse power, which in the Crimean war and the Indian mutiny rendered essential service to the state. It will be remembered that a committee which sat upon our Indian communications recommended that there should be a weekly mail to Bombay, without stopping at Aden, and that from Bombay the mails should be distributed by the new railway system through the rest of India. As there is not business enough for a weekly mail, this could only be done at an increased cost. One of the witnesses before this committee was Mr. Frederick Hill, and the fixed idea of all the Hills is to make a profit out of the Post-Office. The committee thought that frequent communication with India and Australia was worth some loss of revenue; but Lord Derby's Government, with all zeal of converts to free trade, seem to have adopted Mr. Frederick Hill's ideas, and propose to allow the *Messageries Impériales* to carry British mails if, with their 20s. a mile subsidy, they will undertake to do it cheaper than the Peninsular and Oriental. They also propose to raise the overland postage by one-third. Against these strict applications of the doctrines of political economy, of political economy run mad, Mr. Crawford protested, and the House seemed to agree with him. As the Government is not strong enough to differ with the House of Commons, it is probable that the discussion will lead to some rational solution of the questions connected with the overland route mails to India and Australia. Why it is wise

to reduce the postage to America and increase it to India and Australia it would be difficult to say.

The Society of Arts, which meddles with everything, and succeeds in being often amusing, and sometimes instructive, has been attending this year, amongst other subjects, to music and food. The musical investigations are particularly funny, and would be inexplicable if it were not for that huge mysterious monument to Prince Albert, at Kensington, which Mr. Dion Boucicault profanely calls a "Hole." In this amphitheatre it is proved pretty clearly that no manager who has to pay a *troupe* can make money. But if Parliament can be persuaded to grant £15,000 a year to educate 200 aspirants for the honours of British Marios and Pattis, why then the managers of the Albert Hall can give concerts gratis, with the aid of the other hundred students, who are expected to pay for their musical training. This is a proposition to hatch musicians artificially, in a country where nothing equals the liberality of the public in musical matters. Considering that musical artists and teachers are better paid than in any other country, it will require some stronger reasons than yet published to extract £15,000 a year from any Chancellor of the Exchequer.

The results of the labours of the Food Committee are more within the reach of ordinary understanding. Within the compass of the evidence a great many curious and suggestive facts are collected. It is a sort of inquiry that stimulates investigation, invention, and production. We learn from good authorities the comparative value of food. The most remarkable statement with respect to the preservation of food brought before the notice of the committee is a circular of Messrs. Bailey and Medlock; it sounds too good to be all true, but deserves a trial that every housekeeper can make on meat or eggs.

Messrs. Medlock and Bailey say their "process for the preservation of animal substances possesses manifold advantages over all others hitherto proposed, but more especially those of economy and simplicity of application. By its means the meat, poultry, game, fish, &c., of a large household, or wholesale establishment, can be effectively preserved for months in any weather, at a nominal expenditure of time and money; no soldered tin cases are required; no complex apparatus is necessary; no want of flavour or nutritive power is the result; and, finally, whether the edibles thus treated are eaten in two days or two months time, nobody, save the actual manipulator, need know anything about it.

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"In the case, say of a small family who wish to keep a leg of mutton, or a sirloin of beef, for a week in sultry thundery weather, with the thermometer at 90°, take a teacupful of 'Medlock and Bailey's Patent Bisulphite of Lime Solution,' a dessert spoonful of common salt, and about a quart of cold water, mixing the same in an earthen pan, basin, or other suitable vessel. Dip the meat in this mixture for a few minutes, taking care with the end of a cloth to wet it all over, then hang the joint up as usual. A dip night and morning will ensure its keeping sweet and fresh for any length of time. If the weather is unusually hot, a cloth soaked in the same solution may be wrapped round it with advantage.

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"Game or poultry may be treated in precisely the same manner, having been first plucked and drawn. Fish, too, should be previously gutted. Eggs may be retained in the fresh or 'new laid' condition, simply by being completely covered with bran soaked with the same liquid mixture; while bacon can be prevented from getting 'rusty' by this simple plan. If the joints are large and numerous the proportions should be thus:—

Bisulphite of lime	2 quarts.
Common salt	1 pint.
Water	4 gallons.

"When the meat, &c., is required for cooking, all that is necessary is to lay it in cold water for a few minutes, and afterwards to dry it thoroughly in a cloth; on a close inspection no odour or other alteration whatever will be apparent—the lean will not be reddened, nor the fat changed to the deep yellow tint so often apparent with 'hung' meat, and the texture will be as at first, firm and consistent. Nay, more, if, not content with the evidence of our ordinary senses, we place a portion under the microscope, we shall observe that the general structure of the tissues has not suffered in the slightest degree; and if we went further, and delivered the whole to an analyst, his report would be that the various nutritious principles were present as usual, and had not sustained the slightest injury.

"With the view of testing the effects of this new preservative in tropical climates, some beef, mutton, fowl, salmon, lobsters, &c., were treated by Medlock and Bailey's patent process, and exposed in a chamber, specially arranged for the purpose, to a temperature varying from 80° to 110° Fahr. Portions of the same joints, fowls, &c., not prepared in any way, began to emit an unpleasant odour in about 16 hours, and were absolutely putrid in 12 more, while those treated with the preservative mixture showed no sign of decay whatever during the whole period of twelve days; from the very high temperature to which they were subjected, a little oily matter separated from the fish, but the original odour and flavour remained unimpaired to the end of the time, even the lobsters being pronounced 'delicious, evidently just boiled,' by those who partook of the same. The eggs which had not been treated with the bisulphite, &c., all, more or less, decomposed under the influence of the heat, while the others remained 'new laid' throughout. In a word, these experiments, intended to test, in the most severe manner, animal food treated with bisulphite of lime, at a tropical temperature, simply afforded still further evidence of its practical use.

"At the time at which we write, some three months since the trials we have just recorded, all the meats, fowls, &c., remaining uneaten are perfectly good and sweet, although exposed to the ordinary changes of temperature, &c., in a rather warm room."

Circular to Gas Companies.

Another and a most disastrous change has supervened to put a stop to the further progress of the Bill for the amendment of the Metropolis Gas Act. In our last number we confidently anticipated that at one, or at the farthest at two more sittings of the committee, all the clauses of the Bill would have been settled, and that it would have been reported to the House with the amendments then noticed, which had been arranged between the gas companies and the Board of Trade. But at the time the Journal was going to press one of the clauses of the Bill was so altered by the committee, in opposition to an important condition on which the gas companies had consented to proceed with the Bill, as to extinguish all hope of a satisfactory arrangement being arrived at this session, and the proceedings were brought to an abrupt conclusion. We reprint elsewhere a copy of the Bill as proposed to be amended by the Board of Trade, with the exception of the 20th clause (for the compensation of officers), which was proposed by the gas companies, and from which the Board of Trade so far dissented that they objected to compensating any chairman, director, or auditor, whose services might not be required after the amalgamation of the companies. The important points left for consideration when the committee adjourned on Saturday, the 20th ult., were that compensation clause and the clause for the yearly revision of the price and illuminating power. When the committee reassembled on the following Tuesday, Mr. Baxter strongly urged the claims to compensation of the directors, but the chairman was decidedly against the acknowledgment of their claims, and the clause was settled by omitting the words, "chairmen, directors, and auditors," as they were elected yearly. The 51st clause, which provided for the annual revision of the illuminating power and price of gas, was discussed with much controversy, and upon that the fate of the Bill depended. As proposed by the Board of Trade it was as follows:—

In fixing the illuminating power and the price for any company for any year, the commissioners shall observe the following rules:—They shall fix such an illuminating power and such a price as shall be calculated to yield to the company, with due care and management, a dividend in that year (after allowing for the excess or surplus, if any, earned in the then last preceding year to the credit of the divisible profits of the company) attaining, or at least approaching, the rate of £10 per annum; and to make up any deficiency of their dividend in the then last preceding year authorized by this Act to be made up.

There was much contention about the words "or at least approaching," which qualification was objected to on behalf of the gas companies as being too indefinite, but that question sank into insignificance when the committee expunged from the clause all the words after £10, and the chairman stated that their intention was to deny the right of making up deficiency of dividends in the previous year. Mr. Hope Scott, on behalf of the gas companies, then withdrew their consent to proceed with the Bill. The counsel for the Metropolitan Board of Works and for the City authorities also preferred that the Bill should be rejected than that it should be passed as proposed by the Board of Trade. The proceedings then terminated, with an intimation from the chairman that the committee would make a special report to the House in the sense of the three resolutions they adopted on the 9th ult., in the third of which they expressed the opinion that if the gas companies would not accept the proposals then made, powers for the supply of gas ought to be conceded to the local authorities. It appeared evident, indeed, from the remarks of the counsel for the opponents of the Bill, that if the decision of the committee on the 51st clause had been otherwise, the Corporation and the Metropolitan Board of Works would have retired from the committee-room and have renewed their opposition in the House of Lords; so that under any circumstances it became doubtful whether an Act could have been passed this session for the settlement of the question of the gas supply of the metropolis.

The point at issue between the gas companies and the committee is of greater importance than it appears to be at first sight. The committee desired to alter the provisions of the General Act of 1847, by interfering with and preventing the formation of any reserve-fund whatever, or the payment of any back dividends. To alter the provisions of a public Act by a special one is at times objectionable, and it is rarely done except by consent of the parties interested. In the case of the gas companies it would have been peculiarly unjust. An experiment was proposed to be made whether 14-candle gas at 4s. per 1000 feet could be supplied for 15 months, and afterwards

of 16-candle gas at 3s. 9d. per 1000 feet for twelve months, without diminishing the dividends of the companies below the authorized rate. It was admitted, on all hands, to be an experiment, the result of which was to be ascertained at the end of those periods, and if it were then found that the dividend of 10 per cent. could not be realized at the price fixed, commissioners appointed for the purpose were to be empowered to alter the price or the illuminating power, or both, so that the dividends should not fall below 10 per cent. The cost of the experiment to the gas companies would probably have amounted to not less than one-third of their dividends during the latter period of the trial, and that loss the committee refused to allow them to recoup. The refusal would have operated most unjustly on the companies, and the committee could not have been aware of the full effect of their decision, for they seemed to have relied so much on the economy of amalgamation, and the saving by improved management, as to conceive that the profits at the price named would have been sufficient to pay the prescribed dividends, and to have looked forward rather to a further reduction of price than to an increase. The committee have not yet made any report, and it is understood they will not do so for some days to come, in order to allow the companies time to reconsider their decision; but we have no expectation that the delay will produce any change. The gas companies will, we believe, prefer to combat the threatened adverse report of the committee in a future session to the voluntary surrender of the rights which have been guaranteed to them by Parliament. The threat of competition by the local authorities of the metropolis is a bugbear which should not create any alarm in the minds of the holders of gas shares. The Corporation of the City of London is the only body that could raise a shilling for such a purpose, except on the credit of a special gas-rate, and the metropolitan ratepayers are too wary to allow the imposition of a rate for obtaining money to be squandered in reckless competition. In such a contest the shareholders might be content for a time to forego their accustomed dividends, but the ratepayers would be dissatisfied when compelled to pay interest on money borrowed for gas speculation, which would become an inevitable burthen whether the speculation were profitable or otherwise. Nor would the gas consumers have cause to rejoice at a temporary reduction in the price of gas, which must certainly be followed by increased charges to make up for the cost of works to give a competing supply which was not necessary. We should, however, for many reasons, have been glad to see the question satisfactorily adjusted this year, more especially as the metropolitan gas companies might fail in another session to obtain the moral support of their provincial brethren, which was of essential service in procuring the rejection of the confiscatory clauses of the original Bill as a condition of the second reading. Gas supply is not a popular subject in the House of Commons, and many members who supported the companies in resisting the second reading of the Bill might be found among their opponents next session.

Whatever may be the issue of the pending negotiations, it seems certain that an amalgamation of the metropolitan gas companies, by an Act to be procured next session, will be the only means of saving them from ultimately falling into the hands of the Corporation of London and the Metropolitan Board of Works. Influential members of those bodies have, it is reported, intimated that they will be prepared to deal liberally with the officers of the gas companies in return for their aid in promoting the object of transferring the existing undertakings by purchase to the local authorities, and thus dispossessing the shareholders of their property. It is, therefore, important that some practical plan of amalgamation should be arranged without loss of time. We have already on several occasions expressed our preference for a consolidation of the thirteen companies into a single one, and that view is ably supported in a series of reasons just issued, showing the advantages of one gas company for the whole metropolis, in preference to two or more. These "reasons" may be thus stated:—The attainment of uniformity and consolidation. The maximum saving of expenses in the manufacture, distribution, and management. Increased advantages in purchasing coals and selling coke, &c. The supply of each district from the nearest works, and at the lowest initial pressure, which would be attended with the advantage that no leading mains would be required, as at present, to reach distant districts. Surplus land and surplus productive power could be used for the general benefit, which would dispense for some time with the necessity of applying to Parliament for additional powers. The Bills now before Parliament for increased capital would be rendered unnecessary. There would be greater facility for the removal of old works out of London into the vicinity. Losses arising from explosions, or other causes, would be less felt by one large concern. The greatly increased influence of a consolidated board, and greater convenience for communication with the Government or the local authorities. The abolition of discontented comparisons of different companies with respect to the quality and price of gas, &c. The appointment of an official director or auditor would be less objectionable if attached to only one Board than if attached to several, whose working and management he would be always comparing. One consolidated metropolitan gas stock or gas consols would be better understood, and maintain a higher market value, than the stocks of several companies, which would vary according to their separate circumstances, of which the high price of the Liverpool gas shares is adduced as an instance. Lastly, the avoidance of the numerous complicated questions and accounts that would arise out of new districting arrangements were the existing companies to be amalgamated into more than one company. All the preceding reasons for the "fusion" of the thirteen metropolitan gas companies into one great company are valid and practical, and we cannot perceive any reason whatever for amalgamation into a greater number that is not founded on personal considerations.

It was to be expected that those who promoted the agitation against the gas companies would be greatly disappointed at the modifications and ultimate defeat of the Bill, which, in its original state, threatened to confiscate the property of the shareholders, and to hand them over, bound hand and foot, to the Metropolitan Board of Works and to the Corporation of London. The *Daily Telegraph*, one of the organs of that party, growls in vexation of spirit at the result of the inquiry, and repeats many of the oft-asserted misrepresentations respecting the metropolitan gas companies. It gives them the credit of having out-manœuvred the committee of this session as well as that of the last, the report of which, though protested against for its unfairness, it is said "fell miserably "below the justice of the occasion," and the previous committee are upbraided for not sanctioning the Bill of the Corporation, "which sought to destroy the existing monopoly." Though Mr. Cardwell's committee this session are said to have shown a better spirit, those intentions are represented to have been defeated by the interference of the Board of Trade. Among other misrepresentations, it is asserted that the gas companies have contrived, by deceptive arrangements of their accounts, to evade the operation of the law which provides that when the profits exceed a certain limit the price of gas is to be reduced, and that the statutory limit is accordingly never reached. That assertion may have been recklessly made in ignorance of the facts, but its falsehood is so glaring as scarcely to require contradiction. It is well known that nearly all the metropolitan gas companies have reduced their charges from the maximum standard of 4s. 6d. per 1000 feet, fixed by the Act of 1860, to 4s., in consequence of the operation of that provision, which requires a reduction of price when the profits exceed 10 per cent. In some instances, indeed, the price has been reduced still lower by the same cause. The *Telegraph* concludes its remarks by hoping that next session the battle against tke gas companies may be fought with better success.

Mr. Upward has recently patented some improvements in his drilling apparatus for gas and water service pipes, which by an ingenious combination of contrivances completely prevents the escape of either gas or water during the connexion of the pipes with the mains, at whatever pressure they may be charged. The apparatus consists of a drill-post, with cylinder for receiving the drill and a valve, by which means the communication with the atmosphere is cut off when the hole is drilled. The drill-post is secured to the main by a chain clamp, so that by adjusting links it may be fixed to a main of any size with the same chain. The drill and cutter are fixed on the tap, and within the cylinder there is a spring, which prevents the drill and tap from dropping when the hole is first made. A tight-fitting piston (through which the tap passes) is introduced into the cylinder, and presses on the spring, the junction of the cylinder and the main being rendered sound by clay for gas, or by an india-rubber collar for water. When the hole is drilled the piston is withdrawn, and the gas or water is shut off by means of the valve before mentioned. The pressure on

the drill is produced by means of telescopic screws in the head of the drill-post, and motion is given to the tool with an ordinary ratchet brace. In using the apparatus, after having fixed the drill-post on the main with the chain clamp, the ratchet brace is put on, and the drilling is commenced by feeding down the telescopic screw, which is done lightly at first, to avoid breaking the point of the drill. When the hole is cut through the tap is pressed down, and by turning the brace the worm of the screw in the hole is formed. The tool is then withdrawn, and the valve is closed. In connecting the service-pipe with the main a short piece of pipe, or connector, is employed, with a screw at one end to fit the female screw in the hole. The two ends of this connexion are stopped with thin wafers of wax and tallow, and it is fixed into an india-rubber cap, so that when the tap and piston are withdrawn from the cylinder and the valve opened, the connector can be screwed into the main without any escape of gas. The apparatus is then altogether removed, and the ordinary method of connecting a service-pipe is proceeded with. When that is completed, the application of a small amount of heat melts the wafers at each end of the connector, and opens the communication between the main and the meter in the premises to be supplied. The object of the recent improvements in the apparatus is to facilitate its use, and to prevent more completely the escape of gas during any part of the operation.

We publish in another column a list of prizes awarded by the jury of the Paris Exhibition in connexion with the manufacture of gas. We regret to find in these awards of prizes a confirmation of the dissatisfaction with the results of previous similar competitions, which induced many English firms to keep aloof from what will probably be the last great exhibition of national industries in the present generation. In many of the awards brilliancy of polish, and not the solidity and durability which should characterize a machine intended for sale and use, has carried away the prize. The indignity offered to the great firm of Robert Stephenson and Co., whose locomotive engine is one of the best in the mechanical department of the Exhibition, bears witness to the manner in which such awards are influenced. The special correspondent of the *Daily News*, in commenting on the subject, says:—

On the line of the British gas exhibits a flagrant injustice has been done. By far the most remarkable exhibit is that of the London Gas-Meter Company. All their models are new, and are most highly finished. The chairman, Mr. Croll, is the joint inventor of the diaphragm meters. This stall has been the admiration of all the gas authorities who have surveyed it. It presents to the spectator the details of the mechanism of dry and liquid meters in action. The mode of testing the accuracy of gas-meters is shown. The self-pressure regulating apparatus is charmingly ingenious and simple. The motive-power meter, which is worked by a spring or weight similar to that used in a clock, is a most valuable improvement. Its use is to increase the pressure of gas to the consumer when the pressure in the mains of the gas company is insufficient to give good light. In effect, the meter, whilst remaining a measurer of quantity, becomes an exhauster. The construction of each meter is capable of easy explanation by use of the articles exhibited round about them. Another valuable meter in this exhibit is a skeleton 10-light dry gas-meter, every part of which has been put together without solder and by machinery—a result obtained for the first time in the manufacture of dry gas-meters. The accuracy thus obtained enables the Gas-Meter Company to dispense with all means that are commonly employed to adjust the valve-covers to their seats. With valve-plates, and other parts of dry gas-meters made by hand, adjustment is necessary to cover the imperfection of hand labour. The liquid-meter, exhibited by this company, was manufactured by special machinery to ensure accuracy and uniformity of parts. It is used for measuring the water supply to consumers for water companies, and generally for measuring liquids. This form of meter is recommended by compactness and fewness of parts. It will deliver water for use without reduction of pressure, or giving shocks to service-pipes. It has no packed services, and few wearing parts to impair its durability. It is the invention of Mr. Walter Payton. The unvarying water-line gas-meter, the invention of Messrs. Gilbert Sanders and Richard Donovan, ensures the most accurate registration under all circumstances. It is a simple but perfect compensator for lost water. It is not necessary to describe Messrs. Croll and Richards's dry gas-meter; the best proof of its value lies in the fact that it has been in use for 23 years. The unvarying water-line gas-meter is the novelty of the company's exhibition, and its importance has been greatly enhanced since the Legislature passed the Sales of Gas Act, requiring accuracy in gas-meters. Taken as a whole, this is the most interesting gas exhibition in the section. It is remarkable, as I have shown, for its completeness, and it has the further merit that everything has been expressly manufactured for the Exhibition, whereas other firms have been content to re-exhibit their shows of 1862; yet by some unaccountable concurrence of circumstances, this important exhibit has commanded only a bronze medal. So general and acute is the dissatisfaction with the labours of the juries, that many believe the entire list will undergo a revision, and that an independent body of eminent manufacturers and scientific men will determine, finally, where flagrant acts of injustice have been done, and will recommend the Imperial Commissioners to remedy them.

METROPOLITAN MAIN DRAINAGE.—There is to be a thorough investigation into the whole main drainage scheme, the great storm of Friday week having proved it to be a failure so far as carrying off a heavy rainfall is concerned. On the south side, houses and streets were inundated in a most property-destroying manner—and that because the drains could not carry off the water fast enough!—*South London Press.*

Correspondence.

COAL IN AFRICA.

SIR,—I notice at page 604 you state that "there is no authentic information of the existence of coal-fields in any part of that continent"—Africa. I beg to inform you that the enterprising missionary, Livingstone, discovered it cropping out in his ascent of the Zambesi; that his crew collected some of it, and found it a coal of a good quality. Sir R. Murchison can give full particulars, as it was from a speech of his in the public papers some years since that I picked up this information. G. G.

GAS LEAKAGE.

SIR,—Permit me to state, through the medium of your JOURNAL, that the plan suggested by my fellow-manager for the laying of gas mains and services in cast-iron troughs would effect a very great saving of gas, and likewise in pipes for its conveyance.

In the first place, before leaving the gas-works the mains should be proved by a hydraulic pump. If subjected to a pressure of 30 lbs. to the square inch, all faulty pipes would be detected, as I know from personal experiance that they cannot be discovered by the naked eye.

With reference to the making of joints in main and service pipes, I have not yet found any to surpass those made with lead, if the operation is properly performed. The spun yarn should be forced to the bottom of the socket, and the depth for lead should be about 2½ inches, which, when fitted with good soft lead, should be well caulked. A collar should then be formed with Roman cement. Joints thus made will be perfectly tight.

All mains should have a flat strip cast on the top side from the socket to about 6 inches of the small end; the strip should be, on a 6-inch main, 2 inches wide and one-eighth of an inch thick, so that the orifice for each service may be drilled and tapped. The bend of the service should be screwed about three-eighths of an inch further than usual, to admit of a check nut and washer. The bend having been screwed in tight, the check nut should then be screwed down upon the main to render the joint perfectly tight. The joints of wrought-iron services should always be secured by washers and check nuts, but I would advise all managers of gas-works to use lead service-pipes until manufacturers of wrought-iron tubes find out some method of glazing the inside of them. I do not see any difficulty in glazing the inside of wrought-iron pipes so as to fill up all the interstices which occur in them.

I propose to lay the mains in a cast-iron trough at the outer edge of the flags or footpath, and cover the trough with a cast-iron lid made perfectly gas tight. The open space should be filled up with sawdust, which would keep the frost from the main. The top edge of the trough might be placed about 10 inches below the under side of the flags or pavement, so as to have a layer of soil on top of the trough, besides the flags or pavement. Branch troughs should be bolted to the side of the main troughs, to protect the service-pipe when laid, and these should be made perfectly tight at the ends.

One service-pipe could be made to supply three consumers. For instance, if two consumers require a ½-inch service each, and one a ¾-inch, I would cross the road with a pipe 1½ inch in diameter, protected with a trough, and take branches from the 1½-inch pipe with branch troughs to the inside of the house or shop. If a larger service be required it can be laid in the same manner. In this way by crossing the road twice you can supply six consumers, and save crossing the road four times, and the consequent leakage that four more pipes would entail.

This plan of main and service laying might be objected to by gas companies on account of its expense, but I will try and show that gas companies would be savers by adopting this plan. For instance, I will suppose that a gas company is making 12 million cubic feet of gas per annum, the selling price 4s., and the total amount received £2400. If the waste be one-sixth, or thereabouts, as stated in the House of Commons, the amount of waste on 12 million cubic feet will amount to 2 million cubic feet, and the loss per annum to the gas company would be £400. In ten years this waste of money would amount to £4000. Now, suppose six miles of 8-inch and 3-inch main-pipes cost £2800, and troughs to lay the pipes in cost £3800, in ten years the company would be paid for the troughs and a surplus of £200 left. The troughs will last over thirty years, and if the leakage continued for the whole of that time it would amount to 60 million cubic feet, or £12,000.

Value of 60 million cubic feet of gas lost in 30 years under the present system of main and service laying, at 4s. per 1000		£12,000
Value of gas lost otherwise during the same period	£3000	
Cost of troughs.....	4000	
		7,000
Saving		£5,000

This plan of main and service laying in troughs would keep the mains and service-pipes in better order, as any leakage might be stopped at once. For instance, the soil or sand that mains and

service-pipes are laid in, injure the pipes more in ten years than they would be in 20 years laid in troughs made of cast iron; and if the mains had to be removed in any district on account of being too small, they would be replaced with much less cost. I have taken mains and services out of sandy land where they have been completely destroyed; whereas, had they been laid in troughs, they would have been in good order. I shall feel more than gratified if any of my fellow-managers will point out this mode of main and service laying to their directors. The plan is not novel to me, having advocated it 20 years ago, when engaged as an engineer in extending gas-works in many parts of the country. The great saving to gas companies would be a subject worth inquiring into. JOSEPH HARPER.

Market Rasen, July 27, 1867.

SIR,—Your correspondent W. J. P. is probably not aware that Mr. A. A. Croll took out a patent in March, 1866, "For arranging conduits or channels for the reception of gas, water, or other mains," one of the arrangements being nearly identical with that proposed by W. J. P.

It seems to me unlikely that gas companies will construct such conduits unless Local Boards of Health will undertake to pay a fair proportion of the cost.

If we take as an illustration a town with 50 miles of mains of an average diameter of 5 inches, an annual make of 150 millions, and a "leakage" of 15 per cent., the cost of constructing conduits in such a case would be, say, 20s. per yard, or a total sum of £88,000; this, at 5 per cent., gives £4400 as the sum which must be gained in order to pay the interest on the outlay.

Now, supposing the 15 per cent. leakage to disappear altogether, as W. J. P. would expect, the saving would then be 22½ million, cubic feet of a value probably not exceeding £2000—a sum less than the amount required by £2400.

I beg to submit for the consideration of W. J. P. the following questions:—

1. Would 15 per cent. of the gas made, or nearly this quantity, be saved by the means he suggests?

2. Would not the current expense of examination and the repairing of leakages, many of which, if buried in the usual way, would be insignificant, and many others which would not exist but for the active contraction and expansion to which the mains would be subject, form a serious objection to his plan?

3. Ought not gas managers to look rather to the inspection and replacement of defective services, to the regulation of public lamps, and to the reduction of "leakage" within the works?

C. T.

Register of New Patents.

APPLICATIONS FOR LETTERS PATENT.

2124.—ARNOLD BUDENBERG, of the firm of Schaffer and Budenberg, of Manchester, in the co. of Lancaster, for "*Improvements in joints of pipes or tubes.*" A communication. July 26, 1867.

2125.—WILLIAM TAYLOR, of Nursling, in the co. of Southampton, gentleman, for "*Pipes for ventilating, heating, and vaporizing hothouses, malthouses, and other buildings and residences.*" July 20, 1867.

2130.—JAMES HOOPER, of Moseley, in the co. of Worcester, plumber and glazier, for "*Improvements in ventilators.*" July 20, 1867.

2133.—HENRY LEA, of Birmingham, in the co. of Warwick, mechanical engineer, for "*Improvements in taps or valves.*" July 22, 1867.

2134.—WILLIAM ROBERT LAKE, of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, consulting engineer, for "*An improved apparatus for leaning boiler and other tubes.*" A communication. (Complete specification.) July 22, 1867.

2159.—CELI TIMOLEON MOULAN, of Verviers, in the kingdom of Belgium, engineer, for "*Improvements in the construction of moveable joints for connecting metallic pipes and tubes.*" July 25, 1867.

2173.—EDMUND SMITH, of the Free Town of Hamburg, Germany, gas-meter manufacturer, for "*Improvements in gas-regulators.*" July 26, 1867.

2179.—WILLIAM EDWARD NEWTON, of 66, Chancery Lane, in the co. of Middlesex, civil engineer, for "*An improved water and gas meter.*" A communication. July 27, 1867.

2180.—PAUL ALEXANDRE ROHART, of Rue du Canteleux, Douai, in the département du Nord, in the empire of France, gentleman, for "*Improvements in the manufacture of gases for the production of light, heat, and motive power, and in apparatus for that purpose.*" July 27, 1867.

2194.—DAVID HODGE, of Hatton Garden, and ROBERT CHRISTOPHER WITTY, of Laurel Street, Dalston, both in the co. of Middlesex, engineers, for "*Improvements in apparatus to be used in making gas from petroleum and other liquids.*" July 29, 1867.

2221.—FREDERICK HALE HOLMES, at present residing in Paris, in the empire of France, engineer, for "*Improvements in apparatus for the production of the electric light.*" Aug. 1, 1867.

GRANTS OF PROVISIONAL PROTECTION.

1653.—THOMAS HARVEY SAUNDERS, of 27, Coombe Road, Sydenham, in the co. of Kent, for "*A new oil or gas stove.*" June 5, 1867.

1992.—IVIE MACKIE M'GEORGE, of Commune Newry, Ireland, and ALFRED PAUL, of 33, Clevedon Street, Liverpool, for "*A new or improved plug-valve.*" July 8, 1867.

2000.—MATTHEW PIERS WATT BOULTON, of Tew Park, Oxfordshire, esquire, for "*Improvements in engines worked by the combustion of inflammable aëriform fluids, and in apparatus for producing such fluids.*" July 8, 1867.

2004.—JOHN JAMES BUCKLEY, of No. 1, Bond Street, in the parish of St. Luke, Chelsea, and CHARLES HOOK, of Trinity Grove, Maidenstone Hill, Greenwich, in the co. of Kent, for "*Improvements in the manufacture of gas, and in apparatus connected therewith.*" July 9, 1867.

2022.—FREDERICK HOLMES, of Plumstead, in the co. of Kent, engineer, for "*Improvements in pumps.*" July 10, 1867.

2124.—ARNOLD BUDENBERG, of the firm of Schaffer and Budenberg, of Manchester, in the co. of Lancaster, for "*Improvements in joints of pipes or tubes.*" A communication. July 20, 1867.

2130.—JAMES HOOPER, of Moseley, in the co. of Worcester, plumber and glazier, for "*Improvements in ventilators.*" July 20, 1867.

2133.—HENRY LEA, of Birmingham, in the co. of Warwick, mechanical engineer, for "*Improvements in taps or valves.*" July 22, 1867.

INVENTION PROTECTED FOR SIX MONTHS BY THE DEPOSIT OF A COMPLETE SPECIFICATION.

2134.—WILLIAM ROBERT LAKE, of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, consulting engineer, for "*An improved apparatus for cleaning boiler and other tubes.*" A communication. July 22, 1867.

NOTICES TO PROCEED.

720.—THOMAS WALKER and THOMAS FERDINAND WALKER, both of Birmingham, in the co. of Warwick, engineers, for "*Improvements in apparatus for measuring the passage or flow of liquids.*" March 13, 1867.

729.—JAMES CONYERS MORRELL, of Leyland, in the co. of Lancaster, for "*Improvements in apparatus applicable to dry closets, for disinfecting and deodorizing and preparing manures; parts of which are applicable to the separating of cinders from ashes.*" March 13, 1867.

753.—NATHAN THOMPSON, of 15, Abbey Gardens, St. John's Wood, in the co. of Middlesex, for "*Improvements in connecting the ends of pipes and tubes.*" March 15, 1867.

777.—HENRY JUSTINIAN NEWCOME, of 49, King William Street, in the City of London, for "*Improved apparatus for warming or heating buildings.*" March 18, 1867.

788.—ALFRED HENRY HART, of 22, Gresham Street, in the City of London, manufacturer, and WILLIAM PARRY, of Birmingham, in the co. of Warwick, mineral surveyor, for "*Improvements in treating or purifying sewage, and in apparatus to be used for that purpose.*" March 19, 1867.

836.—JOSEPH WHITLEY, of the Railway Brass-Works, Leeds, in the co. of York, for "*Improvements in stop-valves or taps for steam and water.*" March 22, 1867.

936.—EDWIN WILLIAM BALL, of Birmingham, in the co. of Warwick, manufacturer, for "*Improvements in gas fireplaces and gas-stoves, and in apparatus for heating conservatories and other rooms.*" March 29, 1867.

1931.—JOHN SOMERVILLE, of the Gas-Works, Maidstone, and ROBERT ELSDON, of Maidstone, in the co. of Kent, engineer, for "*Improvements in the treatment of apparatus employed in the manufacture and materials used in the purification of gas.*" July 3, 1867.

1967.—WILLIAM ROBERT LAKE, of 8, Southampton Buildings, Chancery Lane, in the co. of Middlesex, consulting engineer, for "*Improvements in the manufacture of illuminating gas, and in apparatus employed in the said manufacture.*" A communication. July 4, 1867.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £50 BEFORE THE EXPIRATION OF THE THIRD YEAR.

1860.—JOHN HAMILTON BEATTIE, "*Improvements in the arrangement and construction of pumps.*" July 26, 1864.

1877.—ALEXANDER PRINCE, "*Improvements in cocks, taps, and valves.*" July 27, 1864.

PATENTS WHICH HAVE BECOME VOID

BY REASON OF THE NON-PAYMENT OF THE ADDITIONAL STAMP DUTY OF £100 BEFORE THE EXPIRATION OF THE SEVENTH YEAR.

1726.—JAMES FLETCHER, "*Improvements in machinery or apparatus for regulating the supply and discharge of fluids to steam-boilers, pipes, and other vessels, and for cleansing or cleaning the same.*" July 17, 1860.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY JULY 23.

The RISCA AND PONTYMISTER GAS Bill was returned from the Commons agreed to, with amendments; the said amendments considered and agreed to.

THURSDAY JULY 25.

The following Bills have received the Royal Assent:—

The TYNEMOUTH PARISH GAS, and the RISCA AND PONTYMISTER GAS Bills.

HOUSE OF COMMONS.

TUESDAY JULY 23.

The RISCA AND PONTYMISTER GAS Bill was read a third time, and passed, with amendments.

The METROPOLIS GAS Bill, &c.—Ordered, That the Select Committee on the Metropolis Gas Bill, &c., have leave to make a special report.

WEDNESDAY, JULY 31.

The METROPOLIS SUBWAYS Bill was read a third time, and passed.

THURSDAY, AUG. 1.

The ABERTILLERY GAS AND WATER Bill, as amended, was considered, and three clauses added.

HOUSE OF COMMONS.

METROPOLIS GAS ACT AMENDMENT BILL, 1867.

THIRTEENTH DAY—TUESDAY, JUNE 25.

(*Continued from page* 622.)

At the sitting of the committee this morning, Mr. Hawskley handed in a table showing in detail the estimated additional cost of 3½d. per candle in increasing the illuminating power of gas from 14 to 18 candles.

Mr. HOPE SCOTT then proceeded to address the committee on the part of the gas companies. He said that before dealing with the general question it was necessary he should remind the committee that they had not heard the evidence on the two private bills (the bills of the Chartered and Imperial Companies) which were depending before them. They had only heard the opening statements in each of those cases, and his clients conceived that the committee would hardly come to a decision upon the general bill, which might affect them, without having first heard their evidence. Another observation he might make was, that he felt himself in some difficulty with regard to the right use of language in speaking of the parties connected with the Metropolis Gas Bill, for in respect of that which was the most important part of the measure, one class of opponents had taken possession of the nest of the promoters, so that as a matter of fact this Government bill, like some other Government bills, was left, for the main conduct of it, to the opposition. Under these circumstances he felt a difficulty now and then in distinguishing, in appropriate phrase, between the promoters and the opponents, and the committee he hoped would pardon him if he fell into any such error. The companies for which he appeared were thirteen in number, and the share capital of those companies, according to the latest return, was £5,934,860, which, added to their loan capital, represented an expenditure for the purpose of supplying gas to the metropolis of £6,885,538. The earliest of these companies was established in the year 1810, which was in the very infancy of gas production in this country, and, in fact, in the world. He believed that the Chartered Gas Company was the earliest gas company ever formed, and that the latest metropolitan company was established in 1850, when a very large portion of the present experience in gas manufacture had been acquired. The committee had, therefore, every stage of experience, and every stage of expense, and every variation in supply during all those years represented in the history of these companies, each of them established independently of any other, and most of them, though not all, established on the principle of competition, and, he might add, with a capital adapted to carry out that competition. The map exhibited before the committee indicated the position of five of the companies before they made the present districting arrangements, and the committee would see there, in different colours, an illustration of what was intended to be done by the capitals of the five western companies at the time of their creation, and during a considerable portion of their existence. Where the colours were found mixed with each other, it might be assumed that there competition existed at one time or other—in fact, as late as the year 1857. And the committee must not forget that this was the doing of the public and of Parliament, and that it was not the absolute choice of the companies. There were few companies which would not have been willing to take separate districts to themselves, but the old existing companies were from time to time attacked by new speculations, and from time to time the consumers backed up the application for competing companies, which Parliament sanctioned, believing that this was the true way of regulating and adjusting the supply of gas, although it had since been found quite the opposite of the true way. He mentioned this as bearing on the question of capital, and the committee would hereafter keep in mind that if in any case the capital of a company seemed to be in excess, that capital was given on a false principle of parliamentary legislation, and on a false demand made by the public for the creation of that capital for the purpose of competition, which they believed would be effectual, but which had broken like a reed in their hands. To pursue the case of these five companies, he might remind the committee that they had had brought before them, by Mr. Barber, a portion of the deed under which what was called the districting was carried out in the year 1857. That deed recited these evils—"First, where there are parallel mains it is difficult to distinguish the mains of one company from those of another, by reason whereof supplies are taken from the wrong mains and litigation is occasioned thereby. Secondly, the quantity of gas which escapes by leakage is increased. Thirdly, the increased leakage occasions increased loss to the companies and greater contamination of the surrounding soil, and even of water in the mains for the supply of water, and greater risk of explosions and other evils by the escape of gas into the cellars and the underground parts of neighbouring houses, and into the mains of the telegraph companies. Fourthly, it is difficult to ascertain from which company's mains the leakage takes place, and, therefore, to which company notices to repair the mains whence the leakage takes place ought to be given. Fifthly, the breaking up of streets for laying, repairing, and renewing gas-mains is frequent. And, sixthly, there is greater injury to the gas mains by reason of the breaking up of streets for purposes connected with water supply and sewerage." Nearly every one of those evils was a public inconvenience, as well as an inconvenience to the companies, and when the arrangement for the districting was made, in the year 1857, they undoubtedly proceeded on the recital of the public inconvenience, as well as of the inconvenience to the companies. And the deed continued—"Whereas, those inconveniences and injuries occasion expense to the companies, and it is requisite either that the five companies, or some of them, should make additional charges to their consumers in order to meet the expense, or that the causes of the expense should be avoided, by the five companies entering into and carrying out the arrangements appearing by these presents, and they have, therefore, determined to execute these presents by way of deed of arrangement accordingly." And then, in another portion of the deed, they proceeded to act on the last gas legislation for the metropolis, for they adopted the Act of the Imperial Company, passed in the year 1854, as the standard beyond which none of the companies, however unrestricted before, were to raise their price. "No company shall be entitled to insist on the observance in their favour of Article 25, except while they are supplying gas in their district at a price not exceeding the price sanctioned, and of a quality at least equal to the quality required by the Imperial Gas Act, 1854." Now, was that a lawful arrangement or not? Nobody denied that it was perfectly legal. It was quite true that, depending upon a private deed only, it might be a matter of conscience to the companies, *inter se*, to obtain the sanction of Parliament to it; but if that sanction were obtained by themselves individually, it could only be a condition *inter se*, and no man had denied that it was legal with regard to the public. Competition had, in fact, become impossible, and the step then taken was taken deliberately, with every regard to the public convenience, and without the slightest complaint from the private consumers with regard to the effect of these districting arrangements. He (Mr. Hope Scott) had been curious enough to look into the prices of gas, both before and after the districting, and he found that the Chartered, the City, the Commercial, the Equitable, the Great Central, the Imperial, the Independent, and the London Companies all charged the same price for their gas, although it was below the maximum of the Imperial Gas Act, after the districting as well as before the districting. Although he had only been able to give the committee the date of the arrangement between five of the companies, the districting had taken place at an early period in some of the companies towards the City. On the other side of the water it took place in the year 1854, but without such a condition as was imposed by the agreement of 1857—*i. e.*, without the adoption of any particular figure, though doubtless, if it had been adopted, it would still have been the maximum figure, and would have had no effect upon the price. He found that in 1853 the Phœnix Company charged 4s. and 5s. per 1000 feet, which price in 1854 rose to 4s. 6d. and 5s. 6d. In 1856 it went down to 4s. 6d. and 5s., so that practically within two years it came again to the same price, which was then the average price in the whole of London under competition, on the other side of the water. Again, the Ratcliff Company went up from 4s. in 1853 to 4s. 1d. and 4s. 6d. in 1854, but merely reached the competition price then. On the south side of the water the South Metropolitan Company rose from 4s. and 5s. to 4s. 6d. and 5s. 6d., which were in 1856 reduced to 4s. 6d. and 5s. In the same way the Surrey Consumers Company from 4s. rose to 4s. 6d., and in 1856 they were down again to 4s. It, therefore, could not be said that the districting had in any case caused a rise of price. Had it diminished the illuminating power of the gas? No; if anything, it had increased it: at least so said the most adverse witness of the company, Mr. Hughes. The question then arose, to which the chairman had been good enough to say he might refer—viz., what was the position of the companies under the the Act of 1860. With regard to the companies, *inter se*, the districting was the Act of Parliament, because it was assumed by the Act of 1860; but with regard to the effect of it upon their profits, he would show how the matter stood. He had only got it taken out generally for the companies from the year 1857, the period of the districting of the five western companies. He found that the profits of the Chartered Company between 1857 and 1860 rose from 6 to 9 per cent.; the City, from 4 to 7 per cent.; the Commercial, which he believed never was under competition, was 6 per cent., and had been 6 per cent. for a long time before; the Equitable rose from 4½ to 9 per cent.; the Great Central, which was under peculiar conditions, from 5½ to 6 per cent.; the Imperial had been at 10 per cent. for a considerable period before 1857, and, of course, it was at that figure in 1860; the Independent rose from 8¾ per cent. in 1857 to 11¼ per cent. in 1860; and in the case of the London Company he would not trouble the committee with the figures, they would be seen by an examination of the table before them, but would merely say that the effect was generally beneficial. They had preference shares which had not been fully paid up before, and which became fully paid up about that period. The committee would find in the returns which had been laid before them that this company, which had only been able to pay the full amount on its first preference of 6 per cent., having never paid until the year 1857 the 6 per cent. at all on its second preference, or any dividend on its third 6 per cent. preference beyond 3 per cent. until the year 1858, when it gave 6 per cent. on its third preference, and received, for the first time since 1848, 3 per cent. on its ordinary stock, by the year 1860 had reached 5 and 6 per cent. The Western Company in that period rose from 5 to 8 per cent., and on the south side of the water, taking the year 1854 as the date of the districting, and carrying the calculation from then till 1860, he found that the Phœnix Company rose from 4 to 8½ per cent, and that they had a bonus practically equal to more than 10 per cent., for it was a bonus of £1 a share on £60 shares, and on which probably not more than £50 had been paid. The Ratcliff Company's dividends had not risen so much, for it seemed not to have been a very flourishing company, but it rose from £5 9s. 3d. to £6 17s. 6d. per cent. The South Metropolitan rose from 5½ to 10 per cent., and the Surrey Consumers from 7 to 8 per cent. Of course there must be variations between these companies, even though they all obtained the same advantages with regard to the question of non-competition—variations arising from the amount of capital to which the dividend had to be applied, and the quantity of gas sold with regard to the fixed capital embarked in the supply of that gas. But by the figures he had quoted the committee would admit he had proved this—that the districting of the companies *inter se* had produced a very large change in the amount of the dividends of the companies, and that in the year 1860, when the Act was passed which was supposed to have conferred such great benefits upon the companies, they were on the spring of their dividend. After the passing of that Act, they almost immediately rose to a very considerable amount, but not to an amount that was disproportionate to the gradual growth of some of the western companies under the districting previous to the Act, nor disproportionate to the increased application which the companies were able to bestow upon their affairs, they regarding the passing of the Act as a settlement of the question between themselves and the public. In the year 1860 there were, therefore, four companies at or above 10 per cent. dividend, two at 9 per cent., one at 8 per cent., and all those were in the spring of their fortunes at that moment. The result was that the districting, being made legal, operated to no disadvantage to the public, for it did not raise the price of gas as a rule, and where it was raised it immediately fell; it did not diminish the illuminating power of the gas, but it did save the public the enormous inconvenience of having the streets broken up, and it did produce a state of commercial matters with the companies, which, if they had remained under the districting without any interference on the part of Parliament, would much sooner have produced those financial results, for there would not have been the same obligations cast upon them as they were subjected to by the Act of 1860. Now, in that year there was no complaint about the price or the illuminating power of the gas by the private consumers. The point on which the investigation of 1860 mainly turned was this: the companies, while under competition, had made arrangements with different local bodies for the supply of the public lamps at unreasonably low rates, it being at one time supposed that the parochial authorities could sanction the breaking up of the streets, and it being also thought that the company which could secure the public lighting was more likely to obtain the private consumption. The consequence was that contracts were made which were not reasonable, looking at the cost of production, and which were also unfair towards the private consumers, who had to bear any loss incurred by the companies from those contracts. He did not intend to deal with that question at present, for this reason, that after all it must be a question arising, not on the price of gas, which the committee would consider *per se*, on its own account, but a question of the relation of the private consumers to the public lighting authorities—in fact, a question between two sections of the public, or of the public under different phases, and it was not, therefore, a matter which need enter into consideration in connexion with this argument. In the first instance, this question of the public lamps was left in the vaguest possible state. The origi-

nally prescribed illuminating power of the gas was that it was to be at least equal to that of oil. This was the standard in some of the old Acts, but the matter had gone through much sifting since, and with reference to the charge to the local authorities for the supply of the public lamps, that was settled in the year 1860 by a clause introduced into the Metropolis Gas Act, to the effect that the companies should not charge a higher price per 1000 cubic feet to any local authority than the lowest rate per 1000 from time to time charged by them to any private consumers, otherwise than by a special contract in writing. So that the legislation of 1860 affirmed the principle entirely that the local authorities should be treated in the same way as the largest private consumers; but that had nothing to do with regulating the price of gas. Now, the result of the districting was that the companies (having, of course, the right to do so according to their contracts) gave notice of the termination of those public contracts, and they were subsequently determined. This produced an agitation, which continued over the years 1858 and 1859, and culminated in the introduction of the Metropolis Gas Bill in 1860. It was not likely that bodies such as the London vestries would acquiesce in that change, and not likely either that gentlemen, seeing in a public agitation the means of bringing themselves forward and getting favour in the eyes of their neighbours, should abstain from agitating. The agitation was considerable, but it turned merely on this question of the contracts being determined; for, as he had already stated, there was at that time no complaint of the price, and there was no complaint of the illuminating power of the gas supplied, so far as these questions affected the private consumers. He now approached the discharge of that part of his duty which the chairman had cast upon him—viz., the explanation of what the companies conceived to be their position under the Act of 1860. Still, he must recall one or two general principles before he came closer to that question. Companies for the supply of gas, like railway companies, and companies for the supply of all other commodities requiring parliamentary powers to sanction them, were established by the Legislature under particular conditions. Parliament said to them—"You shall have power to raise so much capital, you shall have power to break up streets and to take land, but, on the other hand, you shall perform such and such duties to the public;" but when Parliament had cast forth, so to say, any one company armed with these powers, that company was, as a rule, safe from further interference of Parliament *direct*, so long as it did its duty to the public—safe, he said, as a rule, from all direct interference, according to the almost universal practice of Parliament. It was left to the courts of law for the enforcement of its obligations as well as for the enforcement of its rights. The cases in which Parliament interfered directly with companies formed by itself and launched upon the world with its *imprimatur*, occurred, so far as he knew, in only two instances, and even in those very rarely. Amongst these he might instance the case of railways, the conveyance of mails and troops being a matter of high public necessity. In the case of water there had been an interference arising out of the failure of the provisions for the supply of the metropolis, and the Act of 1852 was founded upon that, while in the other particular the interference had been, and that most carefully guarded, when a case of miscarriage had occurred in carrying out technically, by the machinery of a bill, the known object for which the bill was passed. But in this respect he had had a lesson that Parliament was, as a general rule, exceedingly chary of interfering. The committee might, perhaps, remember the case of the Holmfirth reservoir, where so fearful an accident took place a few years ago. A bill was introduced by the company to whom the works there belonged, which, if it had been carried, in all probability that accident might have been prevented. It was proved beyond doubt that the calculations on which the bond capital had been sanctioned by Parliament involved a certain principle of rating, and that that principle was inadequately expressed in the Act. The bondholders obtained no interest, and the company's works were falling into decay; they, therefore, brought in a bill to remedy the technical failure of their Act, for which bill he (Mr. Hope Scott) was counsel. They succeeded in the House of Commons, but in the House of Lords the bill was thrown out as being a disturbance of a parliamentary arrangement, which could only be taken on the face of the Act. The reservoir burst, and those who had resisted the bill lost an enormous amount of property, to say nothing of the loss of life which took place. He mentioned this as an instance, showing to what extent Parliament would push its doctrine of non-interference when once it had sanctioned a company, and sent it out armed with powers to fight its way in the commercial world with those powers entrusted to it. But there was an indirect way of doing it, and it was one which Parliament for a long series of years had adopted, and he might almost say still clung to, as its most available weapon—viz., the institution of rival companies. Against that Parliament never gave a guarantee of a direct kind—at least he hardly remembered such a thing—and seldom of an implicit kind, and this was until the Act of 1860, and since the Act of 1860 was still the power of Parliament with regard to the gas companies of the metropolis. Of course, in speaking in this way about the matter, he excluded that class of cases which implied a review of the original parliamentary contract. Every company which came to Parliament for a fresh Act was asking Parliament for a fresh concession, and Parliament then had the right to make, and did make, alterations in the original bargain. It was on these occasions only that, as a rule, Parliament did interfere, and upon these occasions it acted with the most careful reference to the rights originally bestowed upon the parties, and especially—he might say it once for all—with a rule never to interfere with existing capital, whatever conditions might be attached to the new capital. There were some remarkable instances of railways which were now governed by the same general law. There was the famous Act of 1844, which the right honourable chairman would remember related to the limitation of profits and the acquisition of property by the companies. It said—"Whereas it is expedient that the concession of powers for the establishment of new lines of railway should be subjected to such conditions as are hereinafter contained for the benefit of the public," &c.; and then there was a provision to this effect—"Provided always, and be it enacted that the option of revision or purchase shall not be applied to any railway made, or authorized to be made, by any Act previous to the present session." And, again, what were called the Railway Clauses, and the Lands Clauses Acts, as well as other Acts of that kind, were all made to fit the cases of further applications to Parliament, and it was by the operation of these Acts which were insisted upon now by the authorities of both Houses, and by that alone, that those Acts of Parliament, *ex post facto*, were made applicable to existing companies. He had referred to the practice of Parliament to restrain, by granting powers to competing companies, as the only real method (except by catching companies applying for fresh powers, and subjecting them to conditions) which, as a rule, had ever been adopted; but even this rule was qualified by a remarkable exception. It had been the uniform principle of Parliament that competition should be on equal terms. Parliament had never yet sanctioned a competition by public funds against private capital, and had, as a rule required, that where public bodies took upon themselves the supply of any article dealt in by a company in the same locality, they should first agree either with regard to the price, or with regard to the form of arbitration under which the price should be settled in respect of the transfer of the private undertaking to the public body, so as to exclude unjust and unfair competition with dealers who had no dividend to provide upon their capital, and who had the security of almost unlimited rating powers. He laid this down as having been proved over and over again; there was no case to the contrary to be found. The usual form in which public bodies proceeded was to introduce a bill as the City authorities did in 1866, and by means of the threat of the bill try to coerce the companies into an arrangement. But the companies generally knew well enough what were the limits of parliamentary interference in these matters, and that it was not the practice to back public rates against private capital, whether there was a strong case to the contrary he was not in a position to tell, though he hoped for the credit of Parliament there was not; but, as a general rule, such a thing was unknown. Take, again, the case of the Local Government Act. Where a local board was authorized to establish water-works for public purposes, there being already in the place a parliamentary company for the supply of water, the local board was prevented from establishing works until it had applied to the company to give the supply, and there was a power of arbitration with regard to the price at which the water for that public supply might be granted. Well, then, previous to the year 1860 there were 13 gas companies in London, with no constitutional power of control beyond that which was contained in their respective private Acts. Many of them had very little control at all over them; some of them no prescription of illuminating power, very few a limitation on their dividends, few even a limitation on their price; and the only method by which Parliament could control them was, according to the known ways of Parliament, by competition only. But competition had failed and had become a public nuisance. It involved an extra disturbance of the streets and a double allowance of smells from the gas, and the risk, whatever that risk might be, of the inconvenience arising from the duplication of mains and service-pipes, with scarcely a knowledge on the part of the consumer as to which of the companies it was from whom he received his supply. In this respect gas competition differed very essentially from railway competition. In railway competition there were several elements to consider. The element of price was gone; there was a settled price for every man who went from London to Aberdeen, and the proceeds of that individual were divided among the competing companies. It was well known that the late Chancellor of the Exchequer himself acted as arbitrator in settling the details among the principal companies of the kingdom for the purpose of destroying competition in price; that was to say, not to destroy it, because it destroyed itself, but to regulate it under that form, after the destruction of competition. But when there was a new railway there was always some new place to be served by the way, and although a landowner might be inconvenienced by a duplication of railways, the travelling public—*i. e.*, the people who bought the article from the railway company—suffered no inconvenience whatever, so that when the price failed there was still, in the case of railways, competition, and an additional service to another district. There was, in fact, what might be called, adopting the phraseology invented by his poor friend, Mr. Saunders, the competition of accommodation. But what had they got if the price failed in the supply of gas? They could get from competition nothing but nuisance and inconvenience, and that would be the result of any new competition so introduced by Parliament into London, it being certain that the matter of price would very soon be settled. It would be impossible for Parliament to prevent that, though he had known Parliament try to do it. He thought Mr. Hume, in 1848 or 1849, put a clause in the Dundee Gas Bill that the new company should not even look at the old company. But they did look at the old company; for a long time the price charged had been the same, and they were in Parliament this very year with a bill for an amalgamation. Parliament was, therefore, with regard to the control of existing companies, powerless according to its own known practice. It had, as a constitutional remedy, that which it had itself elected—viz., the power of introducing competing companies; but that last shaft in its quiver was useless, and at the time he now spoke of Parliament could have no power over the existing gas companies according to its own rules and principles, unless they came before it for new powers, and then, of course, it could attach conditions, to be accepted or rejected by the companies as they pleased. At that time the companies were not bound to supply the public in the sense in which they were now bound by the Act of 1860. There was many a company in London which would have been perfectly satisfied to sit down and supply what it could supply without coming to Parliament for further powers, allowing even a portion of its district to be taken by another company if it could not supply the district itself, because the prices would be agreed within the first year after its establishment. That principle appeared to have been perfectly well known by the opponents of the companies in 1859 and 1860, and accordingly they proceeded in the only reasonable way by attempting a compromise. That was attempted through the Home Office, and Mr. Beal's communication was transmitted by the Home Office to Mr. Baxter, who had acted for the companies. The heads of the proposed arrangement contained a great deal of the detail of the machinery, and he (Mr. Hope Scott) would say once for all, with regard to the machinery, that it was entirely an open question, and did not touch the kernel and the substance of the case. But among those heads of agreement was one, No. 32, which said—"No person hereafter to erect gas-works without the consent of the Board of Works." This was rather significant, and was in effect proposing districting. Then Mr. Beal said—"In all those details we do not imagine any serious difference exists, except with regard to the price and illuminating power. What we venture to suggest is, that if the companies are really desirous of settling an arrangement for the supply of gas on a mutually fair basis through your intervention, the bill may go into committee, and the points then in dispute may be contested; but in the meantime a committee of directors, or members of Parliament on their behalf, should be appointed to meet us, or three metropolitan members of Parliament, to see how far agreement is possible." It was found, however, that that arrangement could not be made out of Parliament, and a bill was introduced—a bill bearing on the face of it what it professed to do, the whole principle being that of a compromise offered by the public bodies of London to the companies. It was under these circumstances that the Act of 1860 first entered the House of Commons, and what took place with regard to this point was stated by his learned friend, Mr. Denison, in his speech, and by Mr. Baxter in his evidence, and was partly to be found in other documents. The chairman of the committee to whom that bill was referred (Mr. Sotheron Estcourt) stated, amongst other things, at a certain stage of the proceedings, that they thought it indispensable to sanction in the bill, in terms,

the assigning of districts to the companies; but a decision was come to by the committee with regard to the price at which gas should be supplied, which led the companies to withdraw, and, in their absence, a depreciation-fund was thrown upon their 10 per cent., practically reducing it to 8 per cent. On the application of the companies to the House, the bill was recommitted, and was finally passed as an agreed bill, as a distinct compromise in which the companies were willing to make sacrifices in return for—what? For the districting? No; they had that already, and it was not improved by that Act to any material extent; but in return for what they believed to be a settlement of the question between themselves and the public. The committee would remember the evidence of Mr. Baxter in reference to the recommittal of the bill, and the letter of Mr. Beal on this point. Mr. Beal, in his letter dated August 4, 1860, said: "The bill is avowedly a compromise; we bowed to the superior influence organized in the House of Commons." Of course, whenever property was protected in the House of Commons it was "a job," and whenever property was attacked successfully in the House of Commons it was "the public interest" which was involved. As the committee would see throughout that inquiry and all similar inquiries, there was a recognition of the rights of property, and that recognition he was going to ask at their hands, as he did at the hands of the committee of 1860, and not unsuccessfully. But when parties were launched in a general system of agitation, and when even members of a committee could suggest that the public had as much right to gaslight without paying a profit to the manufacturers as they had to air, it was not very easy to avoid the use of expressions of this kind. They were much more excusable in Mr. Beal than in some other persons; but if honourable members were curious to see anything of the kind, they would find it in a portion of Mr. Cleminshaw's evidence. He was asked, "Do you think it is desirable for a community to have light supplied by a company who make a profit out of the light? *A.* I think a fair and reasonable profit ought to be obtained out of the light.—*Q.* You know air is very essential to all existence? *A.* So it is.—*Q.* So is light. Do you think it desirable that any company should supply you with air and make a profit out of it? *A.* I quite see the force of your views." The witness was evidently puzzled.

Mr. O'Malley said he believed that it was a perfectly sound proposition, if properly understood.

Mr. Hope Scott said the witness was a polite witness, and he replied, "I quite see the force of your views; it is not generally done; it would be well if it could be done." If that was sound, as his learned friend stated, of course it was as applicable to dip candles as to gas. Now what did the Metropolitan Gas Act of 1860 do? Mr. Beal, in the letter referred to, remarked respecting the bill, when it was before the House of Lords—"As it is, as was ably expressed by Lord Redesdale, we are at the mercy of the companies. By the bill, it is true, the districting, or monopoly, is recognized I may add, per force, but the bill does regulate, and, to a certain extent, control that monopoly. It admits the metropolis, for the first time, to the provisions of the Gas-Works Clauses Act—the standard Act—with all its faults and virtues. It makes the main provisions of the Imperial Gas Act of 1854 general. It adopts the provisions, where applicable, of the Water Companies' Act of 1852. It enforced compulsory supply with certain and adequate guarantees. It prescribed a fair standard of purity. It increases the general metropolitan standard of illuminating power—a money value equal to one-sixth. It provided for the settlement of disputes as to public lighting by arbitration, and should the price for the public lamps be enhanced, we can again appeal to your lordships House to establish competition or to prescribe a maximum. It establishes a simple machinery to settle disputes between the companies and the consumers, and with the aid of Lord Redesdale's Gas Measurement Act, does substantially embody the securities required by the public in the supply of gas. The vestries of London are directed to appoint a permanent officer to test the gas. It also directs the companies to erect experimental meters for the same purpose. The latter we do not require and have little faith in; the former is a substantial guarantee. It provides for the service-pipes to be laid up to the premises to be lighted, a guarantee against a growing and great abuse. It provides wholesome restrictions on the contracts now forced upon the public. It enables the parishes to light and extinguish their own lamps, a guarantee that the prescribed quantity will be at our service. It fixes the amount and mode of recovery of penalties for the infraction of any of its provisions. It frees the incoming tenant from an existing liability to pay the arrears of his predecessor. The remaining provisions, and those respecting price, are the best we could obtain. With the bill we have protection, such as it is; without it we have none. We have no guarantee that the Government or your lordships House could give us a better one, and, so long as the metropolis is denied municipal power, we are internally too weak to secure a better one. That there are some amendments still desirable, still anxiously demanded, it would be idle to deny; but, at the risk of having again to come to Parliament, after having already appealed in four sessions and before four select committees, we are anxious to secure some legislation at once. The faults of the bill are sensibly felt, but, at this late period of the session, and with the metropolis disheartened at the treatment they have received at the hands of the House of Commons and the Government, we should mislead you if we anticipated legislation, should your lordships sensibly modify the bill. So that, while Mr. Baxter on the one hand told them the views which the gas companies took of the bill, Mr. Beal on the other hand told them that the bill passed as a compromise—not as a bill which he would absolutely have preferred, but a bill which relieved those whom he represented from a state of perfect helplessness, because competition was the only remedy that he could devise, and he knew that that was impossible. The bill was therefore an enormous advantage, if only for the purpose of initiating further proceedings; and undoubtedly it was treated as such by them. But the mode in which is was obtained prevented that from being pleaded, because it was a bill by consent, upon terms offered to the companies to come out of their stronghold, and submit to the regulation by Parliament of their different concerns. With regard to the equivalent given to the companies, it was supposed to begin by the districting being confirmed. He had already explained their position with regard to the districting, and what remedies there were against them in respect of any complaints from the public. Now, what did the Act of Parliament do? The effect to the companies of this Act was desirable *inter se*, and it was also desirable to avert noisy complaints. The truth upon this subject was proved in the strongest possible manner by a passage in the report of the committee of 1866, where, as would be seen, the districting was put in its true light, as in itself an advantage to the public, and therefore, and in the same direction, considered by the committee to be desirable. They said in their report—"Your committee think that the system of districting should be continued, and, with a view to the economy of administration and the convenience of the consumers and of the public, that every facility should be offered by Parliament for the further extension of the system of regulated monopoly, either in the way of the amalgamation of the existing companies or of the disposal of the interests of the several companies in the metropolis to some body or bodies representing the ratepayers of the metropolis, on such terms and conditions as may be agreed upon and as Parliament may see fit to impose." The question of the districting was not, therefore, the real advantage sought by the companies, and it would be idle to pretend that it was. It had been already established, and without control, before the Act of 1860; that Act affirmed, and usefully affirmed it, to the companies. He did not deny that there was some advantage to the companies from it, but that this was not the principal benefit expected by them. That which they really regarded as the great benefit was that the Act was a settlement of the question, and its transfer from the arena of Parliament to those other places which the Act distinctly contemplated as the places where any further question should be determined. Section 6 of the Act made permanent rules for the regulation of the gas supply of London. It enacted in what way the limits of the respective districts should be determined, and gave to the Home Secretary power to alter those limits either on the application of the companies or on the requisition of not less than twenty gas consumers, on proof being given that any of the companies were not in a condition to supply, or had substantially failed to fulfil the obligations imposed upon them. This was, so to speak, handing over the fate of the companies to the Secretary of State, who could bring a new company into the field if he found beyond the district a company capable of supplying gas and having legal powers to come so far; or he could almost drive the old company out of the field and give it to another company, and all this upon proof of substantial want of compliance with the obligations of the Act. All questions of price also were intended to be regulated by a reference to the Home Office; all complaints were to go to the Home Office; and, with regard to minor details of misfeasance by the companies, those were either referred to existing tribunals with new powers or to a new tribunal, every effort being used to make this a final and conclusive settlement of the question of the metropolis gas supply, to prevent the question being debated over and over again or a public agitation being brought year after year into Parliament, to the great distress and inconvenience of the companies, and to the serious detriment of the property of the shareholders in these undertakings. But, besides that, the old remedy was left untouched, the old weapon was provided again, with an express reservation of the ancient constitutional right of Parliament to multiply companies and to increase the expenditure of capital to the multiplied inconvenience of the consumers who should be unwise enough to call for such a remedy. Looking at the provisions of the Act regulating the inquiries of the Secretary of State in case of complaints being made, and to the innumerable provisions for ascertaining and enforcing all the obligations of the Act, he (Mr. Hope Scott) thought he might fairly assert, and he did not know who the party was that could deny it, that as a matter of construction, both of the framing of the Act and the conduct of the companies with regard to the Act, they had a right to maintain that it was to them finally a settlement under the new system. They admitted the imperfections of the existing state of things, and the impossibility of control by competition, and they consented on their parts to pass from their own independent and comparatively uncontrollable condition into the new one prescribed by Parliament on the basis of the Act, subjecting themselves to its obligations, accompanied, to whatever extent they applied, by the powers which it conferred. The truth was, the restrictions and the new jurisdictions of the Act were in themselves a great safeguard to the companies, because through them they anticipated that they would be saved from all that violence and discontent which from time to time a popular agitation fostered, and it would appear as if the present opponents of the companies had been perfectly conscious of that. The committee would observe from the evidence of Mr. Baxter that hardly a single effort had been made to exercise the provisions of the Act for the control of the companies. Even the appointment of an inspector was uncertain, and only one case was taken before a magistrate, who declined to act, and none had been taken before the Secretary of State. Every possible means had been used by the opponents of the companies and the promoters of the bill, for the purpose of avoiding the issue under those clauses, which were looked to as being a safeguard to the companies, and a prevention of public agitation, and a bar to further applications to Parliament. They were told that all these provisions were useless. Their reply was, "Why did you not introduce a bill merely to amend the machinery?" You would have found us ready and willing to do so if you had pointed it out to us. But in 1866, as well as in 1867, this was merely a pretext. What was the conduct of the companies, as vouching their confidence in those steps? They thought the public agitation would cease, and that they were secure in their position. They were under heavy obligations, and subjected to the Gas-Works Clauses Act generally. With regard to arrears of dividends, their powers to make up their arrears from future profits were diminished from an indefinite time to a period of six years. They were subjected to a higher illuminating power of about 15 per cent., the price was limited to the then existing charge, with certain powers of raising it; the standard of purity laid down was practically impossible, and, as every one now admitted, it must be rectified. A compulsory supply of gas involved a constant outlay of capital, and penalties varying in severity for every non-fulfilment of the provisions of the Act. The companies thought they had obtained peace by those sacrifices, and accordingly they proceeded to raise further capital, so that from the end of 1859 to the end of 1866 they had raised £1,513,600, or thereabouts, which had been expended upon their works. The old share capital having been £4,247,841 at the end of 1859, it had been increased by more than one-third since, on the faith of the protection given by the Act of 1860. Proceeding now to the agitation which issued in the parliamentary inquiry of 1866, he would remind the committee that in 1860 the existing prices of gas—prices which had been in existence for a considerable time, both before and after the districting arrangement, were taken as the rule. There was one company, however, in the City—the Great Central Company—which received its Act of Parliament in 1850, with a maximum of 4s. He (Mr. Hope Scott) well remembered the origin of that company. It was got up by members of the corporation, and was all but a corporation bill. It was a corporation bill in another form, with shareholders, and its corporate clashed with its individual character in that respect. The promoters of it had made a contract with the corporation, by whose favour, in the first instance, it had been introduced, without parliamentary authority, into the City. All these circumstances, he believed, and certainly the existence of their Act of Parliament with reference to the 4s. price, were known to the committee in 1860, but it was thought better to make a uniform rule, and, therefore, although the maximum price of the Great Central Company was 4s., and although under its Act the company had a very precarious livelihood, no exception was made in the case of that company. When the Act was passed the company contested successfully against the corporation, that they were entitled to charge 4s. 6d., which they had done until very recently, and this he believed was the main reason why the corporation introduced a bill last year to get power to supply gas themselves. The nature of the bill would

be found in the evidence given by Mr. Clift, but it was not now material to go into it, because he should hereafter have occasion to refer to it. It would be enough for the present to say that it was based upon the supply of 18-candle gas, at 3s. per 1000, with a capital of £500,000. There were complaints made before the committee on that bill of the unworkableness of the machinery of the Act of 1860, which they had never tried to work. If that had been their simple object the companies could have met them, for, as he had said more than once, they looked to all these things as accessories. If one party to the bargain had not had proper means of enforcing his side of the bargain, the companies, looking at the essence of the transaction and the equities on both sides, were perfectly ready to have those technical details amended. But these things were only brought forward in order to raise a prejudice against the companies, and to give colour to the introduction of a bill. The object of the corporation was to revise the basis of the concessions which were made in 1860, and to alter the illuminating power and price and other things which were determined by the Act of that year, on which the compromise was founded, and on the faith of which the companies had expended their capital. The committee to whom that bill was referred, was what, at the bar, was called a hybrid committee. The representation of the people required reform, and if the principal body required reform, the minor body could not complain if he said it required reform also. He trusted that one of the results of the new constitution which was to be established would be that hybrid committees would not be appointed to sit on questions where the property of their constituents was involved. Before the committee of 1866 the gas companies appeared, and before that committee Dr. Letheby, who was called in support of the Corporation Bill, stated that as regarded the quality of the gas supplied to the metropolis, he had come to the conclusion, after large experience, that London was better without cannel gas; that 14-candle gas was good enough for London, and that, in reference to price, he thought that must not be very much reduced, because if the companies were compelled to adopt the system of purification which he suggested, and which would be found very advantageous, it was costly. He thought 4s. per 1000 would be a very fair price, but that the price would be better regulated by the dividend, referring to the provisions of the Gas Clauses Act of 1847, which was incorporated in the Act of 1860, the effect of which was to make the price dependent on the dividend and the reserve-fund, and under which practically at the present moment there was a saving of 6d. per 1000, and had been since the passing of the Metropolis Gas Act. [The learned counsel read at some length from the minutes of the committee of last year, with reference to the concessions offered by the companies, and the impression made upon the committee upon the case of the promoters, as indicated by the chairman's observation that the companies need not call evidence, and then proceeded.] Such being the state of matters, it might well be supposed that the companies were surprised at the report which was issued by that committee—a report which it appeared to them was almost impossible, after what had passed in the committee. To that report he must now refer. The chairman would remember that what the companies had been hoping to be free from was public agitation and parliamentary interference. He need hardly say that any parliamentary interference directed to the popular side was a great assistance to an agitation, and whether it were just or unjust made no difference, for of course it would be hailed as a support by those who, having other reasons, would make use of the reasons given by Parliament. The committee in their report stated—"Your committee have inquired into the working of the 23rd and 24th Vic., c. 125, regulating the supply and quality of gas provided by the thirteen companies to the metropolis, and have examined witnesses from many large towns, as well as the metropolis, in various parts of the kingdom—viz., Manchester, Edinburgh, Birmingham, Walsall, Plymouth, Brighton, &c." Now, here was a selection of names—names of places for the most part inapplicable to the case. "They have found the illuminating power greater, and the quality of the gas better than in London, and the price cheaper to the consumers. The illuminating power varied from 14 sperm candles to 30 candles, whereas the power in London is fixed at 12 candles for common gas, and 20 for cannel gas, by the Act 23rd and 24th Vic., c. 125." Now, there had been handed in to the present committee two tables; one was an analysis of Captain Gridley's return, and the other was an alphabetical list, showing the minimum illuminating power prescribed by the several Acts of Parliament. The analysis of Captain Gridley's return showed this result:—The number of companies in the return was 175, but Chorley, Ryde, and Warrington furnished no particulars, and the price was not given at Halifax; these places were, therefore, omitted, leaving 171. Then the metropolitan and suburban companies were deducted, and eight gas companies which occasionally supplied gas as well as water, making in all 30, and leaving 141 companies throughout England. The number of places in which gas was supplied by companies was 131, and where supplied by corporations 10, and he found that in the year 1865, 75 per cent.—*i. e.*, 99 out of the 131 companies—charged as much or more than the London companies; 25 per cent., or 32 in all, charged less than the London companies; 6 out of the 10 corporations charged as much or more than the London companies, and 4 only less than the London companies. With regard to illuminating power, he had before him a summary of 118 Acts of Parliament of various dates, none of them he thought prior to the year 1856, and many of them a great deal later than that. Among them there was one Act prescribing 9 candles; 23 of them, 10 candles; 4, 11 candles; 40, 12 candles; 7, 15 candles; and 68 of them, 14 candles, a standard which the metropolitan companies were ready to adopt. Above that illuminating power, there were only 4 that gave 15 candles, 6 that gave 16 candles, and 4 that gave 18 candles. In the Liverpool Act, the standard was 20 candles; in the metropolis, it was 12; and Dewsbury, 20 (though they were not supplied with 20-candle gas); and in 29 cases there was no illuminating power named. Could that, therefore, be called a fair statement of the circumstances which appeared at the outset of the report of the committee of last year? This question was a local question—local with regard to the cost of gas, local with regard to the amount of expenditure necessary to produce it, and local with regard to the expenditure necessary to distribute it. Yet some six places only were taken, and upon the state of things in those places it was asserted that the illuminating power was lower, and the price greater, in London than anywhere else, the metropolitan companies not having been heard by their witnesses! What must be the necessary result of that, but to increase the agitation out of doors? If the committee had had the responsibility of passing an Act of Parliament, he thought they would never have ventured upon that evidence to send the bill up to the other House. But what was the most amusing thing, was, that this 12-candle gas, which was 15 per cent. higher than the companies were previously bound to supply, was what was asked for, in the year 1860, by the parties promoting the Metropolis Gas Bill. It was the standard deliberately adopted and put into the bill by the promoters themselves. True it was they wanted a price of 4s., which, by the operation of the Gas Clauses Act, they had since obtained; but, certainly, the evidence at that time was, that this was all the illuminating power asked for by Mr. Hughes, the Coryphœus of gas agitation. In his evidence in 1860 Mr. Hughes said: "The bill only requires 12 candles, although the companies are at this moment giving considerably beyond 12 candles, and the cannel gas of the Chartered Company is at least double that of the common gas—it is generally reported at 25 or 26 candles." Further on he was asked, "Will you tell the committee what in your opinion would be the proper standard?" and he replied, "I think 12 sperm candles is by no means a high standard for the metropolis; it is very reasonable, and it is one which I have always proposed myself in all provincial works in which I have been concerned. I think no lower standard should be allowed in the metropolis." Dr. Letheby also stated that "as an average it is a very fair standard. I do not think it a high limit; I think it a fair average." So that what they asked they obtained with regard to illuminating power; but that illuminating power having been fixed on their own evidence, they now took occasion to find fault with it. The committee of 1866 proceeded in their report to say that "the purification of the gas in the metropolis is imperfect, and an excess of sulphur remains which is highly injurious to pictures, leather, metals, &c." The companies admitted that that difficulty had occurred, and by mutual consent it would be referred to the Chemical Board. "Since the passing of the Act 23rd and 24th Vict., c. 125, the price of gas to consumers has been increased until recently, whilst the power of light has been less, and the quality of the article worse." On what was that statement as to price founded? Simply on that case of the restriction of 4s. in the City, all the rest of the companies having, as the result of the machinery provided by the Act of 1860, reduced their price from 4s. 6d. to 4s., at which they now stood, and which reduction involved an annual gain to the metropolis of some £245,000. "The power of light has been less and the quality of the article worse." The sulphur nobody had tested before; and with regard to illuminating power, there had never until the Act of 1860 been any regular system of testing. The whole of this agitation was founded on evidence relating to the three City companies, given by Dr. Letheby, and turning on the supposed difference between the old and the new burner, nobody knowing what burner was used by Dr. Letheby or Dr. Aldis for the old testing. The present committee had heard from the company's engineer and from Mr. Sugg himself that the new burner differed from the old one in respect to the durability of the material of which it was constructed, and which prevented its deteriorating as the other burner did. The next allegation in the report of the committee of last year was one that was not law, and he was sure the present committee would not make it law; but what he might call a random report of this kind probably would account for the encouragement which the opponents of the companies had received. The allegation was—"That whereas the dividends of the gas companies in 1860 in no instance reached the amount of 10 per cent. on their capital." He (Mr. Hope Scott) had shown that there were certainly four companies which had reached it, and that others were on the spring, and were pretty sure, with a quiet time, to reach that dividend without the help of an Act of Parliament. "The effect of the Act was to raise the market value of their shares, and to increase the rate of dividend until, as has been shown to the satisfaction of your committee, every company in the metropolis now pays 10 per cent., and many companies have, in addition, paid large sums in the form of back dividends, and have laid by reserve-funds." Now, here the whole of the case which he had been stating in the early part of his opening was entirely ignored; the committee had no materials for it; they would not hear the evidence. The committee then made a general recommendation—"That the illuminating power should be increased and the maximum price reduced;" which gave no information to the public as to what the limit should be, although the offer of the companies to give 14-candle gas at 4s. had been suggested by the principal witness for the corporation, and accepted by them, and declared by the chairman, in his individual opinion, to be satisfactory. He would say one word upon the question which arose here upon the working of the Gas Clauses Act, 1847, the principle of which Act he had referred to before. Was it a reasonable thing, was it a wise thing on the part of the consumers to come at the very moment when they were most likely to experience the benefits of the provisions of that Act, to disturb the companies, and to dislocate their own system? They had already got the benefit of upwards of £200,000 a year, and yet they came forward for a reduction of 6d. in the price per 1000 cubic feet of gas. In the case of the Imperial Company, 6d. meant £50,000 a year, and every fresh addition to capital to meet the wants of a company was now at a lower rate of dividend than formerly. New capital was never given, or had not been given, at a higher rate than 7½ per cent., therefore everything now being spent was spent out of capital bearing a lower rate of dividend than the old capital, and everything now being spent was spent to meet the increased demand, and therefore appeared to be very much more, and very much more quickly, remunerative than the old capital had been. And yet the consumers selected just this moment to come forward and attempt to derange a machinery which was working well, for they had already got a reduction of 6d., with every prospect that before long, with an increased demand and greater economy, there would be a still further reduction. There was every prospect that the Act of 1847, limited as it was by the Act of 1860 with reference to back dividends, would work out the very thing which these, he must say, foolish people wished to accelerate by a breach of engagement with the companies. He now turned to the proceedings which had led to the present bill. Of course, the report made by the committee of last year, which must have rejoiced the heart of Mr. Hughes when he read it, was the main assistant in the agitation, which had since been continued. That report, too, was also considered of sufficient importance to call upon the Government to take up the question. Since the report was made there had been a change of Government, and doubtless the novelty of the broom furnished by the report of the hybrid committee upon a great public question, offered temptations for the use of it. Accordingly before long the Secretary of State for the Home Department was found moving in the matter. He addressed himself, in the first place, to the Metropolitan Board of Works, and subsequently to the gas companies, transmitting to the latter a copy of the communication he had received from the former on the subject of the supply of gas to the metropolis. The questions which were put by the Home Office would be found in a letter from Sir John Thwaites, dated the 22nd of December, 1866, in which the chairman of the Metropolitan Board said: "In accordance with the wish you expressed to me at an interview on the subject of the supply of gas to the metropolis, I have submitted two questions to my colleagues—first, in the event of Her Majesty's Government deciding to introduce a bill during the present session for the more efficient control of the gas companies, and vesting that control in the hands of the Metropolitan Board of Works, what conditions would it in their opinion be desirable to insist upon? Secondly, if, on the other hand, Her Majesty's Government should prefer to bring in a bill to empower the board to purchase the stock, plant, property, and

interests of the gas companies, on what principle would the board be prepared to negotiate for such purchase." In answer to the first of these inquiries, the board stated that, in their opinion, the maximum price of gas should be fixed at 3s. 6d. per 1000 feet, and the illuminating power at 18 sperm candles. Then there were a number of details with which it was not necessary to trouble the committee, except the final one, which related to the terms of purchase—"That, in the event of the Government deciding to introduce a bill into Parliament for giving the board authority to purchase the properties of the several gas companies of the metropolis, the amount to be paid for such purpose should not in any case exceed a fixed charge of 6 per cent. on the present paid-up ordinary capital of the companies, the holders of which are now entitled to, and in receipt of, a dividend of 10 per cent., and that the board should also have such powers as may be necessary for redemption. Your committee beg further to express their unanimous opinion that, in the event of purchase being decided on by the Government, the board should make it a condition that the terms of purchase should be fixed by Parliament, and embodied in the Act to be passed for that purpose." Upon this the companies sent in a paper, which it would be necessary by-and-by to refer to, in some of its details at any rate, and therefore he would not now read it. On the 12th of January last, Mr. Farrer, of the Board of Trade, addressed the gas companies, asking them for, "First, a statement of the amendments in the present system to which the companies would accede; secondly, a statement of the grounds on which the companies proposed such amendments, and if those amendments should differ from the proposals which the Metropolitan Board of Works have made to the Government (a copy of which is enclosed in my letter of the 28th of December), of the grounds of such difference." The answer of the companies was, "That the maximum price for gas be reduced by 6d. per 1000 cubic feet on the price fixed by the Act of 1860, except as regards suburban districts, and subject to the power of increase under the circumstances defined in clause 40 of the Act. That the illuminating power of common gas be increased from the standard of 12 to 14 sperm candles; the burner to be defined as proposed by Dr. Letheby." Then followed provisions with reference to the purity, the quantity of sulphur to be allowed in the gas, the distance at which it should be tested, and a great many other matters of detail, retaining the Gas Clauses Act as regulating the question of dividend. Then there were clauses with regard to the Chemical Board, and a memorandum upon the question of the supply of gas in Manchester and other towns, bringing before the Government the Acts of Parliament to which he had referred, as illustrating the comparative illuminating power of the gas in these places and the metropolis. The next communication was one from Mr. Farrer, asking the Metropolitan Board for the justification of those proposals which they had in the first instance sent to the Home Office. The letter in reply to it, dated the 17th of January last, was certainly one of the most remarkable documents which had ever been issued under the signature of Sir John Thwaites. He said: "In furnishing you with the grounds upon which this board based their proposals for the future control of the gas companies of the metropolis, I presume that regard is to be had chiefly to our reasons for arriving at the conclusions we have specified in reference to maximum price, illuminating power, and purity. We assume that, the Legislature having adopted the principle of districting some six years since, that the principle of competition, either for the field of supply or within the field, has been formally abandoned" (the present committee knew who first proposed that, and what the committee of last year thought of it as regarded the public), "and that, consequently, subject to the maximum of 10 per cent. profits, the companies possess all the advantages of an unrestricted monopoly." The Act of 1860 was, in fact, made up of restrictions. "In 1860, when the districting Act was passed, the financial condition of the companies afforded small grounds for thinking that the maximum of profits would speedily be reached, but the economy effected in the machinery of distribution by districting" (which existed before), "the increased population, and the more general adoption of gas for private use, have made the parliamentary maximum the rule, without the consumer obtaining any corresponding advantage." The public had already had a reduction of 6d. per 1000, and all they asked in 1860, under the operation of that Act, which limited in several instances the previous rights of the companies to dividends. "In fact, some of the companies, in addition to 10 per cent. on their ordinary capital, have during the last six years paid back dividends of 20 and 24 per cent." This he believed was an over-statement, but it was not worth while to stop for that. "Obviously this state of things has the accompanying disadvantage of affording no place for skill, and impeding improvement in the manufacture of gas." He (Mr. Hope Scott) thought if the committee would remember what was stated to them in reference to the Imperial Gas Company, they would not say that that was an establishment in which there had been any neglect of improvement in the way of economy of management. The chairman of the Metropolitan Board then proceeded to show that carelessness might be anticipated, and ought to be guarded against, and his mode of doing so was this:—"The Board feel that the interests of the companies having been so amply provided for, the time has now arrived for making some provision for those of the public, and they addressed themselves in the first instance to the question of price. In fixing this at 3s. 6d. per 1000 for 18-candle gas, they did not suppose that the Legislature, in assigning a maximum of 10 per cent., intended to guarantee a 10 per cent. dividend, yet that would be the practical effect of adopting the companies suggestion of 4s. per 1000 for 14-candle gas, inasmuch as gas of that quality is already supplied at that price, allowing also of the accumulation of a reserve-fund. Doubtless that price of 3s. 6d. per 1000 would require increased exertions on the part of the companies, improved apparatus, and higher skill to approach their present dividends, but we contend that the possession of a monopoly entitles the public to demand that these exertions shall be made; that they need not be made in vain is demonstrated by the experience of Mr. Cleminshaw, formerly manager of the works at Manchester, who gave evidence before the select committee of the House of Commons, questions 1888-9, that 22-candle gas made from cannel coal could be supplied in London at 3s. per 1000. Dr. Letheby gave evidence before the same committee that from 1852 to 1860 the Great Central supplied the City with gas equal to 14·79 candles at 4s." With what amount of dividend Dr. Letheby did not say. "At the present time 14-candle gas, from a difference in the burners employed, is only equivalent to the standard of 12-candle gas as defined by the Act of 1860, so that, in point of fact, the illuminating power of 18 candles required by the board at a price of 3s. 6d. per 1000 is only equivalent to the 16-candle standard of 1860. Seeing, therefore, that Manchester had actually been supplied with 22-candle gas at 3s. per 1000, and that in the opinion of a competent authority London could be supplied at the same rate, the board felt that there was no impropriety in asking the Legislature to fix a price of 3s. 6d. per 1000 for 18-candle gas. Manchester is not, however, the sole case upon which we rest our proof. During the last session a very rigid inquiry took place before the referees, and afterwards before a committee of the House of Commons, into the cost of gas at Brighton, where coals are dearer, the residual products less valuable, and the machinery of distribution, from the consumers being scattered, is more costly, yet the maximum price of gas settled by the committee and inserted in the bill was 3s. 6d. per 1000 for 14-candle gas. And as further proof, if any were needed, the South Metropolitan and Independent Gas Companies are at the present moment supplying their customers at the rate of 3s. 4d. per 1000 cubic feet." That was a question of dividend altogether, and the amount of capital upon which that dividend was to be obtained. The committee would observe that the ground upon which this was demanded by the Metropolitan Board was the evidence of Mr. Cleminshaw and the evidence of Dr. Letheby with regard to the Great Central, which he (Mr. Hope Scott) would put aside, because they never paid anything like a dividend of 4 or 5 per cent. while they were selling gas at 4s. The board also quoted the case of Brighton, and this was all upon which they proceeded. Mr. Beal, as the committee would remember, thought it could be done because the Metropolitan Board thought it could be done, and the Metropolitan Board thought it could be done for the reasons stated here, and which could be very satisfactorily disposed of. On the other question proposed to them Sir John Thwaites proceeded: "Referring to the second alternative submitted—viz., that of purchasing the properties of the several gas companies, I am to state that the grounds upon which the board based their proposition that the purchase value should be estimated at a rate of 6 per cent. on the paid-up capital were, that considering the fluctuating nature of the property, its liability to depreciation by discoveries in chemical, physical, or mechanical science, and the chances of accidents, that 6 per cent. was a fair average rate on which to calculate its selling value, and when guaranteed on such solid security as the board would give, would financially be equivalent, in market price, to the 10 per cent. paid with the present relatively hazardous security." So that in one portion of the paper the 10 per cent. was treated as excessive, and in another portion it was treated as not excessive, because of the hazardous nature of the undertaking in which the capital of the companies was embarked. So much for consistency. He (Mr. Hope Scott) now turned to the City, and to the much more spirited document signed by Mr Woodthorpe, the town-clerk, in which he said: "The metropolitan gas companies, both in the press and in certain memoranda, Nos. 1, 2, and 3, sent to you by their solicitors (which have since been printed and circulated), have represented that the object of those who in the last session of Parliament drew, and are now drawing, attention to the question of the supply of gas to the metropolis, has been to ask the Legislature to break faith with persons who have invested their capital in gas-works, to confiscate their property, and to ruin their shareholders. The corporation of London have too great an interest in the preservation of the rights of property and the maintenance of ancient privileges to allow themselves to remain under this imputation." That was the opening statement, but if the committee would turn to page 7, No. 17, they would find that the corporation were no greater respecters of property than the Metropolitan Board of Works. "The capital accounts of the gas companies should undergo a searching revision by an impartial accountant or surveyor, so as to ascertain, and by an Act declare, upon what amount they are entitled to their 10 per cent." And that the meaning of this might not be doubtful, it was stated, "The further provisions, 17 to 26, are such as experience has shown to be necessary for the protection of the consumers; and the first of these, No. 17—that for ascertaining and settling the capital accounts of the companies—the corporation hold to be indispensable in any new gas legislation, whatever form it may take, in proof of which your attention is drawn to the great discrepancies of the capitals of the various companies. The business of a gas company is to turn coal into gas and sell it, therefore the ton of coal is a very fair standard to take as a unit from which to estimate what the capital of a company should be" (*should be*, not *is*), "and taking this unit we find the capital of the company that has the smallest amount of capital to be equal to about 4·35, and the highest to be about 10·89 for every ton of coal they distil; so that the capitals of the metropolitan companies vary more than 100 per cent." Then that there might be no mistake at all upon this point, it was said again, at page 10, "As to the other question, the terms of the proposed compulsory purchase of the works of the gas companies, I am to state that the corporation approves of the suggestion that the amount and conditions of the purchase should, if possible, be settled in the bill" (not by agreement), "and their opinion that 6 per cent. upon the present capital of the companies is a fair sum is based upon the assumption that 40 per cent. of the whole capital has been wasted or unprofitably employed, which the figures before quoted in paragraph 17 give strong reason for believing to be the case; as also that by their bill of last year the corporation proposed to erect works capable of supplying annually 1000 million feet of gas for an outlay of half a million sterling, and which, if erected at that cost, would make each ton of coal annually carbonized to be represented by a little more than £4 sterling, while the aggregate capital invested in the gas-works of London at this time represents more than £6 sterling on every ton of coal carbonized. If, therefore, the capital of the gas companies is more than 40 per cent. in excess, and ought to be reduced by that amount, it is evident that 10 per cent. on £60 would amount to the same thing as 6 per cent. on £100, and so on of any amount in these proportions, however large; and if the corporation are right in their contention that the capital has been wasted or unprofitably employed, or, in fact, not capital at all, but accumulated dividends" (by "accumulated dividends" was meant dividends which had been spent on works, which were called capitalized profits), "there is nothing in the terms of the Act of Parliament under which the various companies erected their works which authorizes them to charge this loss or improvidence in perpetuity upon the public." Therefore Mr. Woodthorpe, having begun boldly with the assertion that the corporation of London were the last people in the world to interfere with vested rights, proposed in the end to take 40 per cent. off the capital of the companies, as having been wastefully or foolishly expended. Alas for the corporation, if their expenditure had been looked to from that point of view! If their past accounts had been ransacked in that way, and they had been made liable for wasteful or foolish expenditure, where would they have been at this moment? They were the people who recommended shale oil gas, among other things. But even the Metropolitan Board of Works respected the capital of the companies, and merely wished to convert a 10 per cent. dividend into a 6 per cent. dividend, because of the insecurity of the 10 per cent., which arose not only from their agitation, but from the nature of the case. This proposal appeared on the face of it to be much fairer than the proposal of the City of London. They said: "You must begin again; and though you will have very great difficulty in ever getting to 10 per cent. again, you must try it." On the other hand, the corporation would get at their 6 per cent. in the same way, by reducing the capital. This was a curious illustration of a view recently expressed, that human nature

is naturally cruel—that all boys are born cruel, and that it is only education that will make them humane. He (Mr. Hope Scott) did not know if Sir John Thwaites thought of Sisyphus with his stone, or of Procrustes with his bed; but the committee would see the sort of cruelty which the chairman of the Metropolitan Board wished to impose upon the companies, of continually rolling the stone up the hill. In addition to him the companies had the corporation of London trying to attack their capital, and to put it in a bed of 6 per cent., chopping off the ends in order to make it fit in with some particular view which no doubt they could justify in their own minds. He did not suppose that these classical celebrities were before the minds of these civic and municipal gentlemen, yet they appeared desirous of inflicting upon the companies precisely the same form of torture as that inflicted by the old tormentors. But to pursue the transactions which were here referred to—the second reading of the bill was objected to, without foundation, as the promoters of it would say, but, as he would venture to affirm, with that respect for property which characterized the House of Commons, and which rendered it doubtful whether it would assent to the proposed confiscation. He need not detain the committee with the explanation which Sir Stafford Northcote offered. The Government did not propose to deal with the capitals of the companies at all. The question of purchasing their undertakings was given up at a very early stage; but Sir Stafford Northcote proposed to make an alteration in the Act of 1847, with regard to the dividends of the companies, and he was supposed thereby to be encouraging a direct attack upon those dividends. His (Sir S. Northcote's) view was, that it would be better, and wiser, and a more sound policy to go gradually from 7 per cent. up to 12 per cent., making a sliding scale, according to the reduction in the price of gas. The companies did not quite see their way to that, and for this reason—they knew very well if 7 per cent. was ever adopted at all, it would be their ruin. They knew perfectly well that if under the new system they should happen to rise above 7 per cent., they would again have Sir John Thwaites expressing his astonishment at the success which attended their proceedings, and desiring a fresh parliamentary inquiry to reform them, because they had attained the 12 per cent. which Sir Stafford Northcote offered to them. They declined it therefore; they said that what they stood upon was the General Act, which gave them 10 per cent., and that that was the only known and recognized form of associating the question of price with the question of dividend. As the committee were aware, in all offices connected with the regulation of trade, theories were apt to spring up, and his friend, Mr. Farrer, was not exempt from their influence. Mr. Farrer had come to the conclusion that the principle of a maximum dividend was wrong altogether, and that the companies ought to be allowed to make 20 per cent., if they could at the same time, let the consumers have some benefit. He (Mr. Hope Scott) maintained that that principle, whether in reference to the supply of gas, or anything else, was wrong, and it was, of course, an attack upon the whole legislation of the country. Mr. Farrer proceeded to point out the machinery by which the price could be reduced, and the companies were willing to give machinery enough for the purpose. Of course, there were other interviews and other letters, in which were urged the reasons why the companies should submit to further impositions; but in the end this letter was written which formed the basis upon which they now appeared before the committee. It was dated April 30, and was written by Mr. Farrer. He said: "As regards the basis to be taken for the sliding scale of dividends, to the principle of which the companies assented, Sir Stafford Northcote considers that it would not be fair to remove the present limit of 10 per cent. and to give the companies the right of making larger, and perhaps much larger profits, unless a concession is made to the public in the price of gas. Assuming, however, that the select committee would see the propriety of making some provision to this effect" (the companies made it in the form in which they had offered it to the committee), "Sir Stafford Northcote would have no objectiou to take a dividend of 10 per cent. as the basis of the sliding scale, if the circumstances of the companies were alike. The difficulty in adopting that basis is that if a uniform price is fixed, while some companies are able to sell gas at much lower rates than others, a price which will give 10 per cent. to the least favourably circumstanced will give much more to the most favourably circumstanced; and *vice versâ*, a price which will only ensure 10 per cent. to the latter will leave the former with a smaller rate of profit. Consequently it will be difficult for the select committee to determine to which end of the scale they should adapt the fixed price. This difficulty would be avoided by taking the average profits of each company as the basis instead of the fixed rate of 10 per cent. for all. As, however, the companies objected to this proposal, and as the main object of the sliding scale may be attained upon the basis of a 10 per cent. dividend, Sir Stafford Northcote is willing to accept that as the basis, leaving it to the select committee to fix the price with reference to the considerations to which I have adverted." So the bill was printed with a 10 per cent. dividend in it, and with a sliding scale besides. With regard to the sliding scale beyond 10 per cent., that was not a thing which they desired. It was assented to when proposed by the Government, and it bore upon the face of it the shape of a boon. Without that boon—if it were a boon—there was nothing whatever in the bill, from the beginning to the end, which offered an equivalent to the companies for the additional restrictions put upon them. It was not like the bill of 1860, which started with a proposal that was supposed to be beneficial. It came barely and nakedly to interfere with the arrangements of 1860, without offering the slightest advantage whatsoever, unless it might arise from the sliding scale proceeding upwards of a 10 per cent. dividend, of which the companies saw the danger, because they knew it would be made the ground of fresh complaints whenever they attained to that which, nevertheless, upon this occasion, it will be declared that they were properly entitled to. One remark that arose out of the last letter was this, and it was a matter which the committee would have to bear in mind, from all that passed between the companies and the Government, their conclusion, be it right or be it wrong—and they held it certainly to be right—was, that the bill passed the second reading on the faith of a 10 per cent. dividend on the existing capital being one of the measures of that inquiry; and he told his friend, Mr. Davison——

The CHAIRMAN: Stop a moment; I will take that down.

Mr. HOPE SCOTT: We hold distinctly that this bill passed its second reading upon terms which, in our opinion, involved the retaining a 10 per cent. dividend as a measure of return to the companies upon their existing capitals, and we hold the Government, as distinguished from the committee whom I now address—who, of course, are under no fetters but their own discretion and sense of justice—we hold the Government to be pledged not to proceed with this measure if it should assume a form which violates that compact. I was about to remark, before I entirely left this, that there is a matter which no doubt has occurred to you, and which was raised early by some of the objections of the companies, and will be required to be considered by you—namely, the great difference in the position of the companies in respect to their capital.

The CHAIRMAN: You mean the different companies amongst themselves?

Mr. HOPE SCOTT: Amongst themselves in respect to their capitals, and therefore the necessity, if you fix a price which is to produce a dividend—a uniform price for all—that you should fix that price so as to cover the greatest amount of capital. If, on the other hand, you like to be at the pains and trouble of going through the cases of the individual companies, and scheduling them separately, then, of course, you will give a comparison in each case, which would relate particularly to the capitals of those companies. But, while I am making that suggestion, I beg you to remember, at the same time, that the present system is not open to the inconveniences which are mentioned in this letter of Mr. Farrer's.

The CHAIRMAN: You are listening to this statement, I hope, Mr. Davison?

Mr. DAVISON: Most attentively, sir.

Mr. HOPE SCOTT: All I have got to add to that is, that the present system is one which raises no difficulties of the kind, because, inasmuch as the dividend of 10 per cent. relates to each particular capital, and does not relate to the capital of all the companies, it is obvious that the operation of the Act of 1847 will take place with regard to each company. This explains a fact referred to by the Metropolitan Board of Works in their paper, that some of the companies are already charging less than 4s. per 1000 cubic feet. "The South Metropolitan and Independent Gas Companies are at the present moment supplying their customers at the rate of 3s. 4d. per 1000 cubic feet." That is due to the operation of a well-considered and long-established principle, by which the price of gas does come practically to be measured by the proportion which the capital bears to the production; since whatever may be the amount when that capital has attained its 10, or 7, or 7½ per cent., the moment that that has occurred the Gas Act sees no distinction between the companies, for it is a self-acting machinery which meets every case that can be presented to it. But, sir, I should add to that, again, that perhaps it may be said this was not the principle adopted by the Act of 1860—that of scheduling. But let me observe that the existing prices were taken, and as each company professed to be able to sell gas at those prices, those prices were, in fact, high enough to cover all the inequalities, and they have been working satisfactorily under those prices, although so different in the amounts of their capital. Now let me proceed to the question of capital, since that is raised before you. The view taken by the corporation, and the view taken by a variety of witnesses, is, that there should be no substantial difference in the amount of the capitals of the different companies in London. Anything more unreasonable I think I never heard propounded. You know that in the case of railway companies there is an immense difference of capital. You know that in every undertaking, according to its age, according to its local circumstances, according to the price of this and the price of that, according to the quantity which it sells of the commodity which it has to sell, with reference to its fixed charges—you know that in all those cases varieties in the amounts of capital must exist and must be found. Do you suppose that because you choose to call thirteen companies "metropolitan companies," you should bring them all to the same standard of capital, or ought to do so? What do you mean by thirteen metropolitan companies? You mean thirteen companies serving an area of from 125 to 130 square miles, containing 3 millions of population as different in the different parts of it as if those portions were separated from each other by the intervention of hundreds of miles. There is a difference in the population they serve, in the price which they pay for their coals, in the price which they obtain for their residual products, in the quantity of gas sold per mile, in the contiguity of the companies; and remember that if the earlier companies have spent most in capital, those districts have had the enjoyment of gas much longer than the others. All these elements must, of course, enter into all considerations of this kind; and, above all, and besides all, remember that if any capital has been misspent, it has been the principle of competition—delighted in by the London consumer, as long as he can make anything of it, and applied by Parliament as a rectification of all errors—which has caused, in many instances, an increase of capital. My learned friend reminds me that the corporation proposal would deduct 40 per cent. from the lowest as well as the highest. There is no limitation to the bed on which they propose to place the companies. Just let me take two of the instances I have got worked out in detail, for the purpose simply of a curious inquiry, what was the capital of the different companies per ton carbonized of the common gas consuming coal. I take the two which vary the most. I take first the Phœnix, whose capital works out at £8 11s. 5d. per ton of coal carbonized; I will then take the Independent, which is the lowest, and which, as being the lowest, is the very darling of the opponents of the companies, and that works out at £4 0s. 8d. per ton of coal carbonized.

The learned counsel intimated that he should not be able to conclude his address that day, and the committee then adjourned.

FOURTEENTH DAY—WEDNESDAY, JUNE 26.

Mr. HOPE SCOTT said that when the committee rose on the previous day he was about to make some remarks on the capitals of the gas companies. Those capitals were alleged to be so different one from the other as to imply something wrong in the larger capitals; but unless it could be satisfactorily alleged that the capitals had been misapplied (which had been done in the vaguest possible way), it was quite plain—and even then the committee must have the greatest possible difficulty in making the application—that parties *bonâ fide* keeping their shares on the market ought not, on any general commercial rule, to be subjected to any reduction of their property. When corporations and public bodies constructed works, they might take them at their own value at any given period, because they were masters of the funds, and the property which they possessed in the works was, of course, the real measure of that which they had at the time, and for which they were accountable; but when works were constructed out of capital raised in the public market, it became in itself a separate property, and ceased to have direct relation to the works—in fact, it depended for its value on the successful working of the undertaking. If it were not successful, there would be a fall in the value—if successful a rise; but the nominal amount of that capital was properly in the hands of shareholders, and was totally distinct from the actual value of the works. He (Mr. Hope Scott) laid that down as a general rule, not in any degree admitting that that was the case in the companies which he represented; for there could be nothing more fallacious than to suppose that in an area like that of London, with 130 square miles within the metropolitan district, and with a population of 3 millions, there should not be enormous diversities in the circumstances of the companies. He would select two companies supplying common gas, which offered at that moment a most remarkable contrast—the Phœnix, which worked out to £8 11s. 5d. per ton carbonized, and the

Independent, which worked out to £4 0s. 8d. The Phœnix district comprised at least 28 square miles, and a large portion of that district was very sparsely inhabited, varying per mile of main from £4000 to £800. Then, on the other hand, the Independent had somewhere under one square mile, and that contrast in itself was sufficient to explain the difference between the two companies. But there was a further difference, which would always arise until exact inquiries were made: £8 11s. 5d. was what the Phœnix worked out to on the capital returned to the committee, which was the true capital; but £200,000 of that capital was only just commencing to come into operation, and deducting that varied the figure down to about £6 12s. He (Mr. Hope Scott) was dealing with what was a purely imaginary rule. Of course every company must at some time or other have a capital which was for the moment unproductive, and every company must differ from other companies according to the circumstances of the case—the Independent district being what gas people call a very compact little property, and the Phœnix being a large scattered district, with no less than three different works for their supply. He would now call their attention to other capitals. A table had been put in by Mr. Barber which showed that the capital per ton of coal varied enormously. The average of the 35 companies who furnished particulars was £7 3s.; and then, to conclude that portion of the case, Manchester, which had never been subject to competition, worked out on the capital actually employed to £7 per ton, and they wanted £250,000 more; this sum could not be immediately productive, which was just the case with the Phœnix. Salford, again, having a similar advantage—being a public body, and never competed with—worked out to £6 10s. per ton upon the actual capital embarked, and they were in Parliament this year for acquiring more land. Under these circumstances it was idle to talk of this question (as especially bearing on the rights of the shareholders), with regard to the ton of coal carbonized, having anything to do with the inquiry; and he (Mr. Hope Scott) begged the committee to bear in mind that in many particulars there were no companies elsewhere which were under such strict obligations to supply gas as those he represented. Under the Act of 1860 they were compelled to give gas in places and at times when it could not be remunerative; and every obligation in favour of the public, in the nature of increased facility of supply, brought with it a greater proportion of capital to the ton of coal carbonized. In truth, the figure he had given, as raised and expended since 1860, was strong confirmatory evidence of the pressure that Act had put upon the companies. The Imperial, as they had heard, were actually at the end of their last farthing, and this, with their heavier obligations, brought them to Parliament last year after their failure the year before; there being a sum of £1,500,000, or thereabouts, which, under the obligations of the Act of 1860, they had expended, and which up to this moment could not be bearing its proper return. But it was useless to contend that their capitals would be safe if the conditions of dividend on which the capital was raised were violently altered. They admitted that if trade were not prosperous their dividends would fluctuate, and the value of their shares would fall; but the question here was about the violent alteration of the dividend by Act of Parliament so soon after 1860. Therefore if the committee did really mean to respect property they must respect it not only in the form of nominal dividend, but must look at it also in the form of capital raised on the faith, as far as Parliament was concerned—but liable to all speculative chances which affect trade—that it would not be interfered with by Parliament itself. Trade might vary, and the dividend might be affected by it; but a direct action diminishing the nominal dividend fixed by itself when the capital was raised, was in effect an attack upon the capital itself. Moreover in this case it was an attack on the arrangement made deliberately in 1860, and which was held to be a compromise both with Parliament and the public. He (Mr. Hope Scott) ventured to submit that, whether the committee sought by parliamentary enactments to reduce £100 shares to £50 shares, or to reduce 10 per cent. dividend to 5 per cent, they operated equally on the rights of the shareholders—rights derived from Parliament, and assumed to be maintainable in the face of Parlirment, unless on some gross misconduct or failure on the part of the companies. He now arrived at the question of price, with the intention of inquiring whether any advance of light beyond 14 sperm candles, and any reduction of price for those 14 sperm candles below 4s., could be required of the companies with fairness, and with due regard to the interests of the capital which they held. Of course he included the loan capital, and also that portion of the arrangement of 1860 which had reference to the raising of the price in given circumstances, such as a great increase in the price of coal. The case made before the committee was for 18-candle gas at a price of 3s. 6d. Let them see how that was made out, and then they would be able to judge something of the spirit in which this inquiry was conducted on the other side. In the first place, they had heard evidence with regard to Plymouth, to Hastings, and to Brighton, all of which were cases relied on against the companies. He (Mr. Hope Scott) maintained that the circumstances of each particular locality must be dealt with on their own merits, but certainly the case of Hastings, so much relied on by Dr. Letheby, had suffered at the hands of Mr. Wood, the secretary of the company, as complete a demolition as could be undergone by any statement of the case. In 1866 Dr. Letheby said "he had been for two years examining the manufacture of gas at Hastings; they did not use a bit of cannel, or at least did not while he was there. They were working with Newcastle coal, and produced 14-candle gas." He also said they were under every possible difficulty with regard to the manufacture of gas; they had no harbour, and had to pay 15s. or 16s. a ton for the coals, and had no means of getting rid of their coke. Therefore they were obliged to produce as much gas as they could from a ton of coal; and they were getting 9500 feet per ton, and were selling the gas at Hastings at 3s. per 1000. They had now the evidence of Mr. Wood, from which it appeared that the Hastings Company charged 5s. per 1000 up to 1865; they were charging 4s. now, and only paid 7 per cent. dividend. The committee could easily understand that nothing was more simple than to go round the country, and pick up a case, and quote it, and make much of it. It was a popular way of dealing with a strictly commercial subject; and the issue was, that Dr. Letheby was flatly contradicted by the gentleman who must now best, because he was secretary and manager of the company. To add to the picture, the gas was not made exclusively from common coal, but made up with from 7 to 8 per cent. of cannel, on the average, up to 20 per cent. Then the Brighton case was also referred to, and they had the evidence of Mr. Paddon, from which it seemed that the prices were reduced by a natural operation from 5s. to 4s. in two years, and they then paid 10 per cent.; but last year they were forced down to 3s. 6d. The price of coal rose, and residual products decreased in value, and the dividend fell from 10 per cent. to 3¼ actually earned, although 5 per cent. had been paid, that amount having been made up from other sources. The Plymouth case had pretty nearly the same aspect, as they would find in the evidence of Mr. Henderson. He would now proceed to consider the evidence actually given on the merits of this case. Mr. Hughes was the first witness examined, but his evidence he (Mr. Hope Scott) did not intend to go into, for this simple reason, that he started with the axiom of £4 per ton of coal carbonized; that was the rule by which he regulated everything—all his calculations, all his produce of gas, and the rest of it. The next was Dr. Frankland, who had three methods. His first method worked out to 9¾d., or less than that, per 1000, which he said would yield a dividend of £6 3s. 1d. per cent. per ton, £5,647,961; so that he first must demolish the idea of a 10 per cent. dividend, and next he was in error with regard to the share capital, which was £5,834,860. He (Mr. Hope Scott) was afraid he was now quoting a different figure from what he gave before; but he would take his previous amount, which, with the loan capital added, was £6,836,538; so that Dr. Frankland started with a £6 3s. 1d. dividend, on a capital considerably below the capital which is actually embarked in these undertakings. Therefore there was no need to follow his details with regard to the mode of manufacturing gas, merely observing that both Dr. Frankland and Mr. Hughes went to the Scotch cannel-fields—a direction in which no reasonable person would send the gas companies of London after the evidence of the rise in price, to say nothing of its comparatively limited extent. Another reason why he did not go into the evidence of these gentlemen was, that they were experimentalists. Mr. Hughes was at last going to construct a gas-work, but for the long number of years he (Mr. Hope Scott) had known him on committees, he had always been asked, and had always answered that he had never managed or constructed gas-works. This year he proposed to construct gas-works, and, therefore, when he came in any future session he would be better qualified perhaps than now to give an opinion upon those points. Mr. Hughes was a most intelligent and laborious man, but the committee would remember the celebrated saying about facts and figures. With regard to Dr. Frankland, he had never made or managed any gas-works, but he had made experiments—a kind of teapot experiments—that was to say, things which were no more to be compared with the experiments of gas engineers in one of the large companies in London than a storm in a teapot, or any other domestic utensil, was to be compared with a storm on the ocean. They were beyond the power of being brought together in any degree—the one depending on a large experience and knowledge of all the business of a company, and the other being simply an experiment made in a laboratory, which could lead to nothing but the results immediately derivable from the action of the retorts in which the materials were put. Mr. Stevenson, the third witness, had made gas-works and manufactured gas, and therefore he was a man from whom valuable information might be looked for; but he found it necessary to begin by doctoring the capital, which was a pretty plain proof that a man of his position could not face the case under its present circumstances. The committee would find that he differed from Mr. Hughes in the mode of doctoring the capital, yet did it as effectually for his own purposes. He took the population at 3 millions, and said that the capital required for the construction and carrying on of gas-works varied from 16s. to 20s. per head of population. He took the higher price, and assumed that an expenditure of £3,000,000 would be ample for works in suitable positions on the outskirts of London, which implied the complete reconstruction of the gas supply of London—new works, and everything else. Having obtained his £3,000,000, he was able to make up the 10 per cent. dividend; but the whole capital being more than double the amount, of course he must fail in producing a dividend on the actual capital. Mr. Heron merely gave the accounts of Manchester; he did not pretend to experience himself, but he gave the results of all their accounts, which they had had given more fully and correctly by means of Mr. Cawley. Another witness was Mr. Clift, who did nothing more than give his London scheme of last year, with a capital of £500,000, to be raised by the corporation of London by bond, and to produce a sinking-fund of 1 per cent., and 5 per cent. interest on the bonds. In that case the witnesses for the corporation of London were aware that they must displace the companies which supplied the City, and compete with them, because both could not live. They relied, therefore, on a monopoly in London, which they did not care to make a constitutional monopoly in the hands of a public body by any provision for purchasing the works of the companies. The next witness was Mr. Bell, of Rochdale, and his evidence he (Mr. Hope Scott) would for the present pass by. The only witness who had endeavoured to make a case which would be in any degree reconcileable with the interests of the companies was Mr. Cleminshaw. He was a gentleman with a theory, which the French call an *idée fixe*, about leakage, and having once got that into his head he had sought to introduce leakage as the universal solvent; but he even was under considerable difficulties, for he began by assuming that 14d. would pay the dividend of the London companies, whereas it required 16d. to do it; and, moreover, his calculation—even assuming it to be correct, which he (Mr. Hope Scott) would show it was not—worked out to this, that he was over in his own view what was necessary to pay the dividend. He took the Manchester gas at 22 to 23 candles; coal at 10·116d. per 1000 feet; wages, including leakage (which he says is very trifling), at 11·950d.; profit and other charges on capital, 13·934d.; which made altogether 3s. per 1000 cubic feet. Then he took London, from the returns which were before the committee in 1866, at 12 candles; coal per 1000 feet, 9·358d.; wages, purification, wear and tear, and leakage, 24·356d.; profit and other charges on capital, 14·286d; and this made up 4s. per 1000 feet. Then he contrasted the 2s. in London for wages with the 1s. in Manchester, and said there was something wrong in London, which must be looked to; and that the real way to clear it up was to stop the leakage, by which he meant the actual escape of gas from the pipes, and he said that that and the labour necessarily arising out of that accounted for the difference of 1s. in the working expenses between Manchester and London. Now, Mr. Cawley had proved that the Manchester leakage was 11 per cent. of the gas made, while the Salford leakage was 12 per cent. and was formerly higher, and that the London leakage was not what was represented here, but between 15 and 16 per cent., therefore establishing a maximum difference of 5 per cent. between the Manchester and London companies in those respects. Mr. Cawley had corrected Mr. Cleminshaw's figures, and made the net cost of materials per 1000 feet of gas sold in Manchester 11·36d., after deducting the residual products; while with regard to the eight companies in London who made common gas, their net cost was 13·09d. The general charges in Manchester were 12·20d. on the gas sold, and in London 18·33d.; the depreciation in Manchester was 3·02d., so that the real difference between the charges in Manchester and London was just 3·1d. for the general charges and cost of the works, and Mr. Cawley thought that was fully accounted for by the different circumstances of the two places. Mr. Cleminshaw was evidently wrong with regard to leakage, the whole difference being about 4d. or 5d., which he himself to a great extent accounted for, for he said in his evidence that the labour was higher in London than in Manchester. That was the basis of Mr. Cleminshaw's table about the 18-candle gas, and he (Mr. Hope Scott) begged the committee not to forget that. He might add other items—for example,

rates and taxes, which were higher in London than in Manchester, but he thought it enough to point out by a single item they got a difference of 3d. at once in labour in the retorts, which he took from Mr. Cleminshaw's evidence. That question of labour in retorts was a good deal connected with space, as well as with the mere handling of the material where the space was confined. That was the first mode of comparing Manchester and London, and that was disposed of by Mr. Cawley. His second, founded on the first, was an endeavour to make out that 18-candle gas could be manufactured and sold in London at 3s. 6d. per 1000, and the way he made that out was this—he took 1s. off for leakage, and that brought it down to 3s., and then he proceeded to inquire into the difference between 12 and 18 candle gas. He accepted the company's 12-candle table, and then proceeded to attack the 18 candle table, and differed from the companies in several important points. He said, with reference to the charges for Newcastle coal, there were 9 bushels of coke credited in the account, the value of which was 2s. 3d.; but the fuel to carbonize the coal was put down at 12 bushels at 3d., or 3s., which was simply impossible, because 2s. 3d. was credited, but 3s. was charged for fuel; so that as a ton of coal only produced 2s. 3d., it was not possible to charge 3s. for that description of coke. That seemed on the first sight, to a certain degree, a mere play upon the question, because, whether the coke was actually to be from that particular ton of coal or not, it might serve as a perfect measure with regard to the expense of carbonizing. Mr. Evans was very strong on that subject. He said that Newcastle coals used in any appreciable quantity, such as one-fourth, could not be dealt with with cannel coke in anything like the way it could be dealt with by Newcastle coke. Mr. Innes was also strong on that. Another objection was with reference to the quantity of Newcastle coal required to produce 18-candle gas; and a third, with reference to the price of Wigan coal and the price of Wigan coke. The London companies way of working that out was to take three-fourths of cannel and one-fourth of coal, and that was the first point upon which they differed. Mr. Cleminshaw's way was to take one-half cannel and one-half coal. Mr. Stevenson gave seven-tenths Wigan and three-tenths Newcastle; so he differed in the most essential particular from Mr. Cleminshaw. Indeed, the only difference between the London companies and Mr. Stevenson was with regard to the carbonization of the coal, which was a difference of 1s. Mr. Stevenson took seven-tenths of Wigan at 27s. and three-tenths of Newcastle at 16s., and 12 bushels of coke at 3d., his view being that if the cannel and Newcastle were mixed, a coke was produced as good as pure Newcastle, in which he differed from Mr. Cleminshaw, who distinguished the two kinds of coke. Mr. Cleminshaw said that the cannel coke was good enough to work the retorts with, but yet he did not assert it to be of equal value with the Newcastle coke; and yet they found Mr. Stevenson put the same value upon that among the residual products, and treated it as worth 3d. for the purpose of carbonizing when the two were mixed, so that they found Mr. Stevenson and Mr. Cleminshaw at direct issue upon those two main points, what should be spent upon carbonization in some shape or other, and what should be the proportion of coal and cannel to be used for the purpose of producing 18-candle gas. Then Mr. Cleminshaw made out his residual products to be 7s. 11½d., while he put only 12 bushels of Wigan coke for the carbonization, and so worked out, as against the 10s. 3d. of Mr. Stevenson for residual products, a figure of 14s. 10½d. upon the whole ton of coal. Then Mr. Cleminshaw took 10,200 cubic feet as produced from this mixed ton of coal, while Mr. Stevenson, with a larger proportion of cannel, gave 9900 cubic feet as the result of the mixture, and so worked it out. Mr. Cleminshaw gave 1s. 5½d. as the total cost per 1000 of the composite; then he assumed the companies table for 12-candle gas to be correct at 11½d.; and then, having started with the basis of 3s., he showed that this was a difference only of 6½d. He (Mr. Hope Scott) would now take the evidence of Mr. Halls, of Salford, upon the subject of production of light. The committee knew, from the evidence which had been given, that it was not the gas as actually tested, and that it was very far from being the gas which it was represented (and no doubt in perfect good faith) by Mr. Heron to be. [The learned counsel read extracts from the evidence of Mr. Halls, Mr. Cawley, Mr. Brothers, and Mr. Bell, as to the quantity of cannel and coal it would take to guarantee 18-candle gas at Salford.] Now it was not unnatural to find that the companies who had been working on an estimate only—because such gas was not made by them at that moment—were so far confirmed by the evidence of Mr. Bell, who was a practical man, as to find that their price was a price in which he agreed, and which was the lowest of all the figures which had been put before the committee as bearing on the question of price per candle for the increased light above 12 candles. With regard to the Manchester illuminating power, the evidence showed the actual state of the matter on 12 experiments made at Manchester, where the gas appeared to have been tested occasionally at a much higher illuminating power. One feature of this case turned on the residual products—an important feature, no doubt, and one in which a certain manipulation of figures is always possible—but that was essentially a local question, not only with regard to Manchester, but also with regard to different parts of London, and very commonly so. Mr. Stevenson made the reduction for residual products equal to 9s. per ton of coal carbonized, and, of course, he must have been going wholly on a speculative view, especially as he treated the mixed coal and cannel coke as being equal in value to coal coke only. Now this question of residual products had no relation to the price of coal at the time the coke was sold. Mr. Bell said the same, and most of the practical engineers had stated that more or less directly. A table that had been put in gave a statement of the ton of coal, both with regard to its original price and with regard to the residual products realized after the coal had been carbonized. From that table it would be seen that they varied considerably. For instance, they found the Commercial paying as high as 17s. 4·81d., in 1866; the Great Central, 15s. 5·87d.; the Imperial, 16s. 5·90d.; showing a great variation. The curious result from that table was, that when they came to the highest price for the residual products, it was not the Commercial, but the Phœnix, which had the highest price. That company reached to 9s. 0·21d., while the lowest price was that of the Imperial, which was 6s. 8·18d. The result was, there could be no rule laid down on the subject. The engineer of the Imperial, Mr. Kirkham, had told the committee that there was a difference of 2s. between two of their stations in the price of coal.

The CHAIRMAN: I do not wish to interrupt you, but it might be argued that just when competition was more keen, coals might be bought more economically, and the residual products might be sold at a higher price. The Commercial Company, to which you have referred, appears on the map to be as advantageously situated for obtaining coal cheaply as the Phœnix Company.

Mr. HOPE SCOTT said one happened to be on the canal, and the other was not. Those were the details of the case, which he would explain, if the committee wanted all the details connected with the different situations of each company. The committee would pardon him if he said that the companies were not at that moment all of them in receipt of their dividend; the lowering of the price to 4s. had had an effect upon them. They had every possible inducement, there being a back dividend to recover, a reserve-fund to lay aside, to work in the most economical manner, and nobody said they were not doing so. Of course, if the committee supposed that the companies were squandering their money——

The CHAIRMAN: We do not suppose anything about it, but you seem to be taking it as a datum point that what is actually paid and received must necessarily be the utmost that under any system could be gained for the common benefit of the compeny and the consumer.

Mr. HOPE SCOTT: Surely, sir, so long as we have an interest in making money it may be taken for granted that we shall endeavour to do so?

The CHAIRMAN: It was for your convenience, in arguing this on the map, that we drew your attention to it.

Mr. HOPE SCOTT said, until it was proved they were misusing their funds, it might be assumed they were doing the contrary. His object was this, that there was an immense variety in the prices, both of the coal and the residual products. Surely all the companies would be likely to be selling at the same price if it were a mere matter of buying in at the same price. If there be one company on the canal and another not on the canal, and if there be cartage in one case and none in the other, like the City companies which are on the railway, and if there be a demand from particularly one class of people in one case and not in the others, those circumstances entered directly into the question. The Commercial was on a canal where they paid canal dues; the Phœnix was on the river, where they did not pay those dues, and this related to the cost of coal delivered; and, as he said before, there was a difference in the Imperial between two of their stations. But what he (Mr. Hope Scott) inferred, apart from such a suggestion as that with which the chairman had honoured them, was that the case of each company, with regard to its power of production, must be measured by the cost of coal and the value of the residual products. Those were given in a summary which the committee had in a table before them; but the particular details which he now laid before them were details illustrating the impossibility of a fixed rule of comparison between the metropolitan companies, even as a body, and the country companies, where the circumstances might be different. It was on these grounds that he submitted to the committee that the promoters of the bill, so far as regarded the illuminating power and price, had entirely failed to make out their case. Their principal witnesses had not pretended that the dividend on which the companies relied could be paid out of 18-candle gas at 3s. 6d. They had all shown that it was necessary to reduce the capital or the dividend to support their view of the illuminating power coupled with the price; and their own witnesses—more particularly the engineer at Rochdale—had said that the calculation with regard to the increased cost was fair and reasonable. The committee knew that it required on the average 1s. 4d. for dividend and interest,; and therefore, if one-half of the calculations were true, the reductions which would fall on the profits altogether would be very serious indeed with regard to the dividend. The companies calculated at 2½d. per candle, and so did the Rochdale witness; and when his figures were applied to their prices for coal, the result would be that it would sweep away three-fourths of the existing dividend. But even assuming that it were lower than that—taking it at half, so that 6d. or 7d. would be the reduction—that would amount to very little short of one-half of the sum now applicable to dividend; and if that were so, he (Mr. Hope Scott) could hardly conceive it possible that the committee would enter upon an inquiry of that kind with the evidence so plainly put before them. The only exception, as he had said, to the rule that the capital must be increased or the dividends diminished, was the case put by Mr. Cleminshaw, which he had examined, and as to which he hoped he had shown that no reliance could be placed upon it. That being so, all he had to say was that 14-candle gas and 4s. they had already proposed, and were ready to fulfil, but beyond that they did not feel they could safely go. That would put the companies to their proof; they would have to work to get their dividend under greater disadvantages than at present; and if they succeeded in that, from the gradual increase in consumption, and the gradual operation of that upon the capital, a reduction, of course, would follow. But as to putting a higher point with regard to the illuminating power, and a lower point with regard to the price, that had been found on consideration by the companies a matter of such great danger and so little in accordance with the understanding, either with the Government now or with Parliament in 1860, that he must beg the committee to consider in the most serious manner what they were about to do in bringing down seriously the dividend if they increased the illuminating power. They took the 14-candle gas from Dr. Letheby. The table before the committee showed that there were 68 Acts of Parliament requiring 14-candle gas only; 4 requiring 15 candles; 6 requiring 16 candles, and only 4 requiring 18-candle gas throughout the whole country. There was another consideration, which was one bearing, in the first instance, upon the companies, but in the second instance upon the public. Mr. Hawksley seemed to consider that people who do not prefer a higher illuminating power are unintelligent, but that the general desire for cheap gas was a prevalent desire, and not for a higher illuminating power was certain, and the moment the illuminating power was increased it affected the companies directly by diminishing the consumption, and made them dependent on the supply of particular cannel-fields. The gradual rise in the illuminating power prescribed by later Acts of Parliament had materially affected the value of cannel in Scotland, and if the committee proceeded on anything but a very small admixture of cannel in the manufacture, it would affect other bills to be passed hereafter, and they must look forward to a period when it would be utterly impossible to supply the gas at the price, from irregularity of supply and other causes, thus laying a foundation for an application from the companies to undo a legislation which he (Mr. Hope Scott) submitted was inconsistent with the circumstances of the case. The committee had excluded evidence with regard to the probable exhaustion of cannel, but they had not excluded evidence showing how very small a proportion of the whole coal yield of England is cannel. Mr. Elliott had put it at 1½ per cent. on the whole coal yield of England, a smaller fraction still on the coal yield of Durham, and an infinitesimal fraction on the coal yield of South Wales. They would be throwing the supply of gas first in the metropolis, and then generally throughout the country, upon a field of cannel which the companies said was exhaustible, and laying a ground for further difficulties and further applications to Parliament; because, of course, the companies must live, and it was only on the supposition that they could live that the committee could at this moment direct anything with regard to the illuminating power which would be inconsistent with their interests. He (Mr. Hope Scott) could not assume that they would legislate in that direction with those dangers before them, and whatever decision they came to, he was sure they would do it with the intention of not interfering with property, it having been practically upon the assurance that property should not be interfered

with that this bill had been launched and brought before them by the Government.

Mr. MICHAEL said he should confine his remarks almost entirely to the Western Gas Company, and he ventured to think it was of some importance to the committee that they should have the means of comparing the working of those companies which supply common gas exclusively with a cannel gas company, which is in a different category. They must exclude entirely from their comparison the four companies which supply common and cannel gas, for there was no evidence to enable them to separate the quantity of coal used and the real results. The Western Company were the first company that endeavoured to introduce into London cannel gas; and the committee would at once see that there must have been very great difficulties in a new company coming in to meet with the opposition of very powerful companies, to occupy their ground, and to supply a material which was considerably in advance of their illuminating power. The difficulties of competition were very great, and that would account for the fact that up to a comparatively recent period the capital, as measured by the arbitrary test now put before you, was comparatively high; but he (Mr. Michael) would be able to show that they now bore a fair comparision with the capitals of all the other companies, from whom they had been able to get returns throughout the country. It was very important with regard to this question of cannel gas, and it became increasingly important to this inquiry, that it was totally impossible to carry out any of the proposals of the promoters of this bill without adherence to cannel in the manufacture of gas; and therefore anything that bore on the Western Company must be of extreme weight in determining what legislation there should be with regard to the future supply. In looking over the abstract prepared from Captain Gridley's return, there was but one single company throughout the whole country, the standard of whose illuminating power had been fixed so high as 20 candles, and that was Liverpool. They might at once dismiss Manchester after the evidence they had heard, because, as in water supply, they could not take the average—they must take the lowest figure. It was very well for the Manchester people—where the companies were under no restrictions, and the supply was in the hands of the corporation, with no public to watch it, and no inspector to inflict penalties—to say that they supplied 18 or 20 candle gas, when it might be reduced to 15 or 14 candles without any penalty being inflicted in consequence; and in reality the power at the time it was tested was very little more than 16 candles. It was a question of the greatest importance in the working of gas companies, as distinct from these laboratory experiments, that a company under the Gas Clauses Act is bound at all times to keep up to that supply which it guaranteed to the public. Taking it from that point of view, Liverpool was the only Act which enforced the supply of 20-candle gas. The committee would doubtless have noticed in the return that there was another town (Dewsbury) which was also bound by Act of Parliament to supply 20-candle gas; but that was only 20-candle gas when they said they would supply cannel; and having found that that was impracticable, that company might be dismissed from the category, because it was found from these returns that they only supplied 12-candle gas. The Western Company were established at a time when all the companies were competing, and the consequence was that that competition was destructive to them; but the company occupied the western or the most favourable portion of the metropolis, where gas of a high illuminating power would be likely to be in demand, and where also it was possible that, if gas should be used for culinary purposes, there would also be some demand. Now, one word with regard to the use of cannel gas for culinary purposes. The evidence brought before the committee showed that, even amongst those best acquainted with the subject, there was considerable difficulty in getting at a real statement of the value of cannel as compared with ordinary gas for heating purposes. He (Mr. Michael) believed it would be found that, volume for volume, cannel was more valuable; but that, taking it by its price, it lost the advantage by volume. Taking the cost of producing 20-candle gas against that of 14-candle gas, and the heat generated by both, it would be found by the evidence that it was more useful to employ coal gas for heating purposes; but he did not want to enter into that subject. He thought it had very little bearing on the question; and so small a quantity (though it was daily increasing) was used for heating purposes in the metropolis, that it was not worth while to go into the matter. Then, when the agitation for cheaper gas commenced, of course it would be asked that cannel gas as well as common gas should be cheapened at the hands of the companies supplying. But he (Mr. Michael) would ask the committee to refer to the evidence, and also to the demands which were framed in the bill of 1860, and they would see it was only asked that 18-candle gas should be supplied at 6s. per 1000. At that time a concession was made by the Western Company, and the 18-candle gas was raised to 20 candles; and that 20-candle gas had, as was shown by the evidence, been given from that time to the present, without a single complaint from any private person or by the public inspector.

The CHAIRMAN: What is your present price?

Mr. MICHAEL said it was 5s. 6d. One of the witnesses on the part of the company had been asked questions that would have been important if they could have been readily answered; but they were questions involving the impossibility of an answer, from reasons that would be apparent at once. The questions were directed to the feeling of the public with regard to the change from the higher to the lower quality and price. Now, it was curious, in looking over the accounts of the companies, to find that comparatively no change—and certainly no change in system—occurred in any district in which cannel gas was substituted for common gas. It was true that in isolated parts persons were deprived of the option; therefore the witness, with very great care, feeling the difficulty of answering the question, had not been able to give the committee satisfaction, though he wished to do so, and he (Mr. Michael) wished him to do so, in answering questions to which it was impossible he could give correct answers. It was true, as he had said, that there were isolated complaints of persons who feared that their gas bills were to be increased, by having 6s. put in instead of 4s.; but in the practical working it had come to pretty much the same thing. The public were so ignorant in gas matters, that all they looked to was the initial charge; and the evidence bore him out that in 999 cases out of 1000 the public appreciated a reduction in the price, while they were totally incompetent to appreciate a rise in the quality.

The CHAIRMAN: I will only point out, for the purpose of assisting the argument, what I meant. What I wanted to know was whether, when, instead of competition between two companies, one of which only supplied cannel, and the other only supplied coal, the districting arrangement cut certain persons off, on one side of the line, from the possibility of having cheaper gas, and on the other side of the line from the possibility of having better gas, the result of that operation at all showed whether the public preferred the one or the other. And you say it is quite impossible to answer that question, though I do not see the impossibility. But you next proceed to say, that all which the public in their great darkness desire is cheaper gas; and, therefore, I presume it must follow that those persons who were thrown into the cheaper districts, and got worse gas at a lower price, were very much pleased, and those on the other side of the line were very much displeased, for, though they obtained better gas, they did not appreciate it.

Mr. MICHAEL: No; because in the transference of the districts there was not really a transference of the cannel to common gas, and the common to cannel gas, because at that time you will remember that several of the companies had commenced to supply cannel gas, and in the districting arrangement there was not that violent dislocation that you would imagine.

The CHAIRMAN: If this is at all important we may as well really know what we are about. The Imperial Company is a company supplying only common gas, and the Western Company is a company supplying only cannel gas, and there certainly were some people who had the option before of going either to the Imperial or the Western Company, and who, after the districting took place, must have been compelled to go to the particular company to which they were districted. If I am to take it as a datum in your argument that the public would like a worse gas at a lower price, then we can go on.

Mr. MICHAEL: I do not at all attach much importance to that; but while there were persons who were forced to take cannel instead of common gas, there were none who were forced to take common instead of cannel gas.

The CHAIRMAN: But that could not have been the case if any of your supply extended to what is called the Imperial district.

Mr. BARBER: That was not so; the Imperial Company gave up to us, but we did not give up to the Imperial.

The CHAIRMAN: Then there was a portion of the public who were by the districting arrangement compelled to do that which you say they did not like—namely, to take better gas and pay a larger price.

Mr. MICHAEL said that was precisely the fact, but the converse was not the case; therefore it was not possible to answer the questions. It would be found, by a reference to the table which had been put in, that the consequence of this competition to the Western Company had been that for several years they obtained no dividend whatever upon their capital; then the dividend rose to 2 per cent., to 3 per cent., and eventually to 5 per cent. Then, in 1857, came the districting deed, which showed that the competition had become so ruinous that there must be an increase of price, or a districting, which would be a regulated monopoly in price and competition. From that time the dividend rose to 8 per cent. and upwards, as a bonus was given before the Act of 1860 came into operation, which had been added to the 8 per cent., and which showed that the good results which attended this alteration were not due to the Act of 1860, but to the districting which took place before that, and which in reality was legalized by that Act. But in return for that being legalized there was a long list of restrictions, which bore especially upon a company such as the Western—which company had looked, in fact, to the working when there should be no competition to make up for the want of good results which had existed during the whole of the time when competition had taken place. By being placed under these restrictions and limitations, however, a sum of £103,000 had been at once struck off their profits, which was a serious thing to a company who had been so badly off in the time before, and they had been restricted to making up a back dividend of only six years back. By the consession given to the public at that time the price for 20-candle gas was to be 6s.; but the Western Company, finding that they had about £30,000 to make up their reserve-fund, and finding that other companies had been able to reduce their price, though they had not come up to the maximum, they determined to reduce the price to 5s. 6d. The operation of that Act had really been to identify the interest of the public with the interest of the producing party. The public had a direct interest in watching, and they had the means of testing the purity and the working of the company, any excess or extravagance being patent and open to them; and there was also the power of other companies coming in with the sanction of Parliament and competing. If there were a profit of over 10 per cent., a competing company could come in and get that profit; and therefore the companies were obliged to exercise a great degree of caution, whether for coal or other purposes, because they knew that they were constantly open to revision by Parliament and the public. And with regard to the 10 per cent., the sooner that was arrived at the better for the public, for then a reduction would take place. Now, the working of the Western Company threw great light upon the question, and it showed how, by a regulated monopoly, in this way, taking even the arbitrary tests proposed by the other side, the operation of that Act, if continued, could only work out to the benefit of the public, jointly with the companies. In the table put in, showing an analysis of the working of the company, especially with regard to the capital, it would be found that before the year 1856 the share and loan capital per £100 income was £531 9s., and after that it had diminished in ten years—viz., in 1866—to £317 9s., or a diminution of 40 per cent. The share and loan capital per £100 gas-rental amounted in 1856 to £608 7s, and to £364 8s. in 1866, which was a diminution of 40 per cent. per million feet of gas made. The capital was £1610 in 1856, and in 1866 it had come down to £842—a diminution of 47 per cent. Then as to the share and loan capital per ton of coal (which was an important point), while the capital in 1856 under competition was as high as £13 3s. per ton, it had been reduced in December, 1866, to £7 8s., or a diminution of 41·3 per cent. That showed that under the working of that Act, and by that regulated monopoly, there was a continual benefit, taking the test per ton of coal, and the capital required, and therefore the profit and dividend which were required, so that the companies were continually benefiting themselves, and the public must in the same way have derived a benefit. If this had gone on for 10 years progressively, and had caused such an improvement, it necessarily followed that by allowing it to mature itself the diminution would go on continuously increasing; because while there were certain costs and charges which must be taken out of the profits, still, as the workings showed that in 10 years 41 per cent. had been diminished, another 10 years would naturally bring much more diminution. The number of consumers had increased from 4779 in 1856 to 11,700 in 1866; and as to the amount required for dividend and interest per 1000 feet of gas made (which was another very important point), while in 1856, before the districting, it was 35·4d., it had diminished in 1866 to 18·36d., which was a diminution of 47 per cent. per 1000 feet. He (Mr. Michael) had intended to refer to the various tables of capitals put in, as showing that this was not an excessive capital of £7 per ton, even taken according to the statement of Mr. Hughes, because he was evidently totally in error when he put down £4 as the average of all the companies throughout the kingdom. It should have been £12; but correcting that error, which increased the average from £7 3s. to £7 5s. gave £7 10s. as the average of all those companies who furnished returns; while £7 8s. was the capital of a company making cannel gas and requiring a larger capital in proportion to the ton of coal; because, if one ton of coal gas was made of a higher illuminating power, it required a larger amount of profit. That large

amount of profit came out of a large amount of capital, and therefore a larger amount of capital was required, in order to pay a dividend of 10 per cent., because the starting-point, of course, was that 10 per cent. had been guaranteed by Parliament, and they were there on the understanding that that 10 per cent. was not to be interfered with. The £4 was a mere arbitrary sum, to explain which they had been furnished with no data whatever. They had had no sum given to them with regard to the cost of producing the gas, the cost per retort, the cost of the land, the capital employed in the distribution, and the working capital. Had all those figures been furnished they would have been able to test whether the £4 put down was really based on any practical suggestion; but, in truth, it was merely an arbitrary sum put in in order to justify his learned friends making out 18-candle gas at 3s. 6d., and so far as he (Mr. Michael) could see, it came to nothing else. Now, the pertinent question, as it appeared to him, was that if, in the year 1860, 6s. was a fair price to charge (and that was not the maximum fixed by Parliament, because the maximum was 7s. 6d. for 20-candle gas), what were the circumstances to justify any diminution of that price? Had there been anything shown with regard to the manufacture which would in any way diminish the cost of the retorts? Had anything been proved that would diminish the cost in the setting, or in the material, or in any other way? Had it not rather been the other way—that owing to the improvements in the mode of purification, and the demand on the part of the public that no nuisance should be created in that purification, the cost had been increased? Had there been anything proved that would justify any decrease as compared with the time when the Act of 1860 was passed, after three years of careful inquiry into the cost of producing gas? Had anything been proved with regard to the coal to justify decrease? Certainly, with regard to the cannel, which was the only coal in which he (Mr. Michael) was interested, all the evidence had gone the other way; it had gone to prove that there had not only been a very considerable increase, but that there must be in future, *ex necessitate rei*, a very considerable increase of price, which would be charged to the London gas companies for cannel coal. That was putting out of the question what the present legislation might be; because the committee must know that companies were every year coming to Parliament, and that there were demands on the public for a better quality of gas, and that in all the bills which were passed there was a higher standard put in than those companies had been in the habit of supplying. That was uniformly the case he (Mr. Michael) thought; and to supply that it had been found necessary, as had been proved over and over again in these inquiries, to use a certain, or rather an uncertain, amount of cannel in order to raise the quality. Therefore, as there were a large number of companies that would come to Parliament, and as they might naturally suppose that Parliament would still insist on a better quality, and as cannel would necessarily be required, putting out of consideration other uses to which cannel was devoted, all the evidence tended to show that if there were to be any legislation with regard to gas, instead of decreasing the price it should be raised. There was also this very important element, that while the cost of coal had been increasing of late years, and especially at the present time, the price received for the residual products, which was extremely important, had been continually decreasing. In fact, they knew from the evidence given that the tar products, which were at one time thought to be enormously valuable for a certain commercial purpose, had been found totally valueless; from being much sought after, and continually increasing in price, they had become a drug in the market, scarcely saleable at any price whatever. Taking those two things together, the cost of the coal, and cannel especially, had been very largely increased to a company like the Western. Was there any reason why the price of gas should be decreased, when the supply of the material for making it must decrease in future. The third great item in the cost of manufacture was that of wages. They had abundance of evidence, if evidence were necessary, that wages were permanently increased and increasing; and wages were an element that referred not merely to the working of the retort-houses, but influenced the whole inquiry. The purification of gas had increased in cost, and must increase, because the question of purity would no doubt be brought before them; and the companies had already conceded that a body of chemists should be appointed as a testing body, in order to see that there was no impurity in the gas. Thus they had coal increasing; they had the residual products, which were formerly valuable, comparatively valueless; they had wages continually increasing, and in the face of that all the evidence went to prove that instead of cannel gas being diminished to the consumer, it was the other way; so that if in 1860 it was a fair price that 6s. should be paid for 20-candle gas, and they now charged 5s. 6d., then, instead of a smaller amount being fixed in the bill, if the evidence were to be taken as a guide, the price should be raised and not diminished. His learned friend, Mr. Hope Scott, had gone so largely into the question of estimate, that he (Mr. Michael) should content himself with a very few words, and that especially as to cannel gas. He had prepared for his own guidance a table, which he ventured to think was of some importance, looking at the matter commercially, and supposing those gentlemen to be practical men (which they were not), and supposing those experiments to have been made in a large gas-work, and not in a laboratory, and supposing them to have come out scathless from the test; but in fact the four main estimates which had been put before the committee entirely defeated each other with regard to 18-candle gas. He would take coal, to begin with. Mr. Hughes gave the price of coal at 27·49d.; Professor Frankland gave it at 26·25d., Mr. Stevenson gave it at 34·11d.; Mr. Cleminshaw gave it at 26·83d. Then he took the residual products. Mr. Hughes gave them at 9·16d.; Professor Frankland gave them at 11·5d.; Mr. Stevenson gave them at 12·31d.; Mr. Cleminshaw gave them at 9·35d.; all to produce precisely the same thing; and the result worked out the same with regard to the cost per ton. Mr. Hughes gave it at 18·33d.; Professor Frankland gave it at 14·75d.; Mr. Stevenson's figure was very nearly 50 per cent. above this, for his figure was 21·8d.; and Mr. Cleminshaw gave it at 17·48d. Those very differences were enough to destroy the value of them, and the calculations based upon them. But when they came to the manufacture, they came to a matter not of calculation but of simple putting down of figures. Mr. Hughes put the manufacture at 12d.; Professor Frankland put it 17d.; Mr. Stevenson put it at 12½d.; Mr. Cleminshaw put it at 12·35d. Now there the differences were about 40 per cent. as between the higher and lower estimates. As to the dividend, Mr. Hughes had put that down at 9d., instead of 16·20d., which was required to make out, in accordance with the estimate of the working of all the companies, a dividend of 10 per cent. As to Mr. Cleminshaw's estimate, which was really the more important estimate of the three, the evidence of Mr. Pritchard entirely destroyed the accuracy of his figures. Without occupying the time of the committee with details, he (Mr. Michael) would ask them to examine very carefully both Mr. Pritchard's and Mr. Hawksley's evidence with regard to Mr Cleminshaw, to show on what false data he proceeded to make out the estimate of 44·11d., as the cost at which 18-candle gas could be supplied. It was found, when worked out, to be only 16-candle gas. All those gentlemen had fallen into two fatal errors; they merely calculated the gas at the works, and not at the testing station. The attention of the committee need hardly be called to the fact, which was abundantly proved, that in proportion to the richness of the gas so would be the amount of deterioration. It followed necessarily that, as to gas which contained in solution a very high per centage of the hydrocarbons, as it passed through the pipes the friction against the surface tended to make it of less value as it proceeded. The evidence was clear that in proportion to the distance which the gas traversed, there was a dimination in its power; it might be a decreasing ratio, but it continually diminished. That was their first error; and another very important one was that in calculating the leakage they calculated the amount which they put on in expense, instead of the amount which was to be diminished, and which was found to be a very different matter—he meant the quantity sold less the quantity made; that was to say, they added on a certain small sum, say 12 to 15 per cent., instead of taking it off the quantity which had been made. Putting Mr. Hawksley's and Mr. Pritchard's corrections against Mr. Cleminshaw's estimate, which was the only one that fulfilled the conditions of capital and dividend, it would be found that for 16 candles Mr. Cleminshaw really supported the figures given in by the various engineers; and with regard to the capital, it would be found that 3½d. was required for every candle of gas. In taking the whole of the evidence it was curious that, worked out and corrected, 2¼d. to 2½d. would be the cost of production per candle in gas. The average of all the companies would be about 1⅞d. for the dividend on the capital, which brought it up very nearly to 3⅝d. which was the sum insisted on in all the calculations. That 1⅞d. was the sum required to pay a dividend of 10 per cent. for all the companies.

The CHAIRMAN: I tried to get this from Mr. Hawksley, but I did not succeed.

Mr. MICHAEL: I find that that 1·30d. would represent the sum which would be required to pay the dividends upon the existing capitals of all the companies; and working out the Western Company, that would be about 1·2d.

The CHAIRMAN: Supposing you were going to set up entirely new gas-works, and it was not yet ascertained whether you would be compelled to furnish a higher quality of gas at a higher price, or a lower quality of gas at a lower price, you would say that would cost you 2¼d. more per candle, the higher you went up from 12 candles?

Mr. MICHAEL: Yes; this 1¼d. represents the capital spread over the whole of the time.

The CHAIRMAN: But I want to separate it into the difference between one quality and the other. Suppose you are a new company, and your capital is £100,000, assuming you are correct in saying that 10 per cent. is the authorized dividend, you would have to divide £10,000 a year. You are content that there should be a certain price if you make common gas, and a certain other price if you are to make cannel gas, now the difference in cost would be 2¼d. per candle.

Mr. MICHAEL: Taking it on the basis of the present companies, between 2¼d. and 2½d.

The CHAIRMAN: But you will not be content with 2¼d. as the difference in price, if you require 1¼d., and all I want is that you should state what that represents.

Mr. MICHAEL: That represents the dividend required to pay 10 per cent. on the existing capitals of all the companies. I mean that supposing they were called upon to make 18-candle gas, there should be 3·58d., and that, to pay a dividend of 10 per cent., there would have to be deducted, looking at the working, about 1¼d. for the dividend, and that sum must be a fluctuating sum, so that in the equation you must be continually shifting the figure.

The CHAIRMAN: But I purposely put the case of a new company.

Mr. MICHAEL: But I do not want to enter into the case of a new company; I take it entirely on the basis of the Western Company's existing working.

The CHAIRMAN: You will please excuse me; I am not endeavouring in the least degree to bring about an argument—on the contrary, it is solely with the view that we may collect with perfect accuracy what you may wish to put before us. I do not wish you to answer my questions unless you please.

Mr. MICHAEL: I see an immense difference in giving you an answer on the existing working of the company, and presuming to give what would be an entirely hypothetical answer with regard to the working of a new company.

The CHAIRMAN: All we want to know is what this 1⅛d. is, and I only put to you the mode in which I should have been glad, if it had been convenient to you, to have it taken up; but if you do not like to answer the question, you need not do so.

Mr. MICHAEL: I like it if I were able to give you an answer; but it would be impossible to give you an answer of any value.

The CHAIRMAN: Do you mean that it would be impossible for this committee, if we were dealing with a new company, to form any idea whether, if we raised the illuminating power from 12 candles to 18 candles, we ought to adopt either 2s. 2d. or 3s. 2d., or any other sum.

Mr. MICHAEL: Yes; I say that it is impossible, from the evidence before you to get to any fair conclusion on that point. You must have evidence of the value of the land, the expense of the works, the cost of the mains, the cost of the distribution, the number of the consumers, the number of the public lights, the amount of depreciation, rent, rates, and taxes, before you could have an answer of the slightest value. What I do say is this, that I have worked out those tables of the existing companies, and in my own company, and that that is the conclusion I arrive at. I quite appreciate the value of the question, and I hope I have shown you the reason why I cannot answer it.

The CHAIRMAN: You have not satisfied me.

Mr. MICHAEL said he was sorry for that, but he would not pursue the subject. What he wished, so far as the Western Company were concerned, was to show that the working of that company fairly bore comparison with the working of other companies, whether metropolitan or provincial. For their working up to that time they had required per candle 1·114d.; but, owing to various circumstances, it might be put down that they assimilated to other companies in order to pay the dividend of 10 per cent. He was reminded by the secretary that at the present time 3·3d. was the cost per candle of producing gas; but that, he was afraid, would not help them in the other inquiry. Nothing had been shown to the committee as a cause why the price should be reduced; there had been no complaint of any misfeasance on the part of the Western Company, who had supplied the public with what they undertook to supply at a less price than Parliament gave them the power to do. They had conformed to all the restrictions placed upon them. There was, he said, no evidence before the committee to show why the price should be reduced, so far as they were concerned; but rather, if there were any inference to be drawn from the evidence, that it should be increased. He referred to the working of the company very confidently, to show that their interest and the interests of the consumers were identical, and that a fair working out of their capital would tend to reduce the price in

future if they were not interfered with; but that any abrupt legislation interfering with the price could only tend to reduce the statutory dividend which they said they were entitled to under the Act of 1860.

FIFTEENTH DAY—TUESDAY, JULY 2.

Mr. O'MALLEY addressed the committee in support of the case for the corporation. He said he must begin by adverting to the very bitter tone in which the gas companies, by their counsel, had treated the proceedings of last year, and the report of that committee. He frankly admitted that such a tribunal as that which sat last year was not the best for investigating a question of this description, and that the only way in which the question could be decided was by a committee such as that he had then the honour of appearing before. But he could not help thinking that the gas companies were not misled by anything that fell from the committee last year. They were fairly challenged at the end of the case for the promoters by the chairman of the committee, calling upon them to use their own discretion, as to whether they would call further witnesses or not, and no one could have heard the evidence given before this committee without feeling that they exercised a wise discretion, for no doubt the strongest case that could be made out on the part of the public against the gas companies had been made out by the witnesses called by the companies themselves. There were matters into which it would have been difficult for any one on the outside of the companies to have so perfectly dived, unless they had had the details of the management of the companies put before them. The committee would find, in the course of his observations, that his arguments rested mainly either on statements with regard to matters of fact given by the servants of the companies, or upon fair deductions from what they had said. The chairman very properly suggested that it would be desirable, if the parties could agree, to state in a tabulated form what things thay had mutually agreed upon, or that the evidence of the witnesses should be laid before them in such a form. That suggestion had been most grievously abused on the part of the companies, and they had thrown before the committee (he could not help thinking with some ulterior view) an utterly unintelligible mass of figures, which often contradicted one another. With those figures he intended to deal very little; but, looking over them with the assistance he had had, some of them presented very tempting fields for observation, were it not that it would be wasting the patience of the committee to go into them. He would now look at the state and position of the case. The bill itself was referred to the committee, but he would say at once that the question of good faith and bad faith was a question between the Government or the Secretary of State and the companies. It was not a question referred to the committee, but if they looked at the correspondence which had taken place they would find that the threats and insinuations of bad faith which had been thrown out by the companies were all themselves in the very worst faith, for, if there were a contract at all, they (the corporation) were no parties to it; and if there were a contract, it amounted to this—that the maximum dividend of 1847 should not be disturbed, that the clauses for the compulsory purchase of the company's works should be struck out, and that all the other questions should be left to the arbitrament of a committee fairly chosen for the purpose. That there must be some measure of this sort the companies themselves admitted, and they so far subscribed to the report made by the much-abused committee of last year that they admitted the price of gas was too high and its illuminating power too low. They therefore came before the committee with the admission (although, with reference to the burners, a fallacy might lurk in the admission) that the price was to be lowered and that the illuminating power was to be raised; and the question before the committee now was what was to be the amount of the illuminating power, and what was to be the amount of the maximum price. The first question for them to consider was what would be the price of gas of the illuminating power of 18 candles, and he ventured to say he should satisfy the committee from the evidence of the companies themselves, without reverting to the evidence on the other side, that Mr. Hawksley's first statement on former occasions was a correct one, that the price of raising the illuminating power of gas was 1d. per candle. No one, with the exception of Dr. Letheby, who had appeared before the committee now or last year, ever put the illuminating power of Newcastle coal higher than 13 candles. The companies themselves, in that most extraordinary and most delusive statement which they submitted to the Board of Trade, assumed it to be 12 candles. The committee would find that, for the purpose of this inquiry, the lower the Newcastle coal gas was fixed the better for the public—the more for the side he advocated and the worse for the other side. But he would give them the advantage of the highest figure at which any one had put the illuminating power of Newcastle coal—viz., 13 candles; and the question, then, was how much cannel would be required to raise it to 14 candles. The evidence seemed to show that 7 per cent. was the quantity for that purpose. If that were reduced into figures, it gave 27·2 as the illuminating power of cannel gas; if the companies chose to take it at 12½-candle gas, the illuminating power of the cannel which they mixed with their common coal must be 34 candles, and if they took it at 12-candle gas it must be 40. Mr. Hawksley, in his evidence, said that at Brighton 12½ per cent. would give 15 candles. Now, if they took Newcastle coal at 13 candles, the illuminating power of the cannel must be much more than 27, because 27 and 13 would only produce 14·62. Mr. Hawksley also said that at Nottingham they used one-fifth, or 20 per cent. of cannel, but taking 20 per cent. to work out 17 candles, then the illuminating power of the cannel must be greatly in excess of 27 candles. Now every 10 per cent. of cannel put in was 10 per cent. worth of illuminating power put in, and therefore it was 14 divided by 10, and it would be found to be established that each 10 per cent. of cannel was the lowest illuminating power that could be adopted consistently with the truth of the evidence. The next question was that of the productive power of the coal, and this was not nearly of so much importance as it might appear, because working it out at three or four different figures the difference in the rate per cent. was very small, the increase bearing so small in proportion to the whole mass. Mr. Innes, in his evidence, put it at 10,400 feet, and Mr. Halls at 10,500 feet, Mr. Cleminshaw 10,800 feet, and Mr. Barber said that in 1866 it was 10,337 feet per ton, and in the previous year 10,850 feet. He (Mr. O'Malley) would assume the productive power of cannel coal, therefore, to be 10,400 feet at the works; the difference between the 9500 and the 10,400 was 900, and one-tenth of that added to every per cent. of cannel gave 90 feet for the increase of the yield per ton at every step that was taken. He took the companies own price for cannel, 27*s.*, and for common coal, 16*s.*; though, looking through the evidence, he thought these were very high figures. The next important question that arose was the question of residual products. The learned counsel then referred to the statements put forth on the other side as to the value of the residual products, many of which, he said, were utterly without foundation, and were a monstrous misrepresentation. He then came to the cost of production. He took the statement of the companies that common coal gas was produced at a price of 11½d. per 1000 feet. That, he said, was for 13-candle gas. He then allowed 1d. per candle, to raise it to 18 candles, which made 5d., and that, of course, raised it to 16½d. at the gasholder. He then deducted 10 per cent. for leakage, which would make it about 1*s.* 6d. at the consumers meters. He then turned to the question of capital, and he called the attention of the committee to what was the state of affairs before the year 1860, before what his learned friend, Mr. Hope Scott, chose to call the districting commenced. In that year the companies were almost in universal competition. In every one of their bills they went to Parliament for powers, extending almost over the whole area of the metropolis. They got from Parliament only the power which they mainly required, of breaking up the streets, subject to certain restrictions, and then with reckless improvidence entered into a system of ruinous competition one with another. Was Parliament or the public to blame that thirteen companies came raising capital or building works, sufficient, each one of them, to supply the whole of the districts? Who would venture to say that either Parliament or the public were to blame for that? It was the system which was then universally acknowledged as the system that ought to prevail in every trade including that of gas. During the time the companies were thus coming to Parliament for capital and establishing works for enormous districts, and were competing for the supply of the public lamps, there was no doubt they did incur a ruinous expense; but it was their own fault. The result was that their capital was unproductive, and though they were in such a state that they might still go to Parliament for fresh capital, there was no one they could get to take it; they were paying scarcely any dividend, and their concerns were in a state of ruin. Well, when great mercantile companies found themselves in that state, what did they do? They wrote off their lost capital and made fresh arrangements. Where were the original shareholders of Waterloo Bridge? Where were the original shareholders of the Thames Tunnel, the Great Eastern Railway, or Overend, Gurney, and Co.? Their capital was gone; in most of those cases it was like spilt water. If the persons who had lost that capital wanted to regain it, it must be by employing the annual profit of the concern in order to accumulate it afresh. But that was not the principle upon which the gas companies had acted, as the committee would see by-and-by. Finding the ruinous effect of the competition which they had been carrying on, they, for their own purposes, agreed to district the metropolis. Mr. Burke, at an early period in this discussion, spoke as if the districting was forced upon the companies. His learned friend, Mr. Hope Scott, however, more wisely told them that the districting was of their own mere motion, and that it was for the purpose of saving themselves from ruin. Accordingly each company had to give up an immense quantity of property to the other. Did they give this up when three or four companies had mains running through the same streets? Did each incoming company buy those mains as if they were available mains for the purpose of the public service? If they did so, they were burdening themselves with four or five times too much, which they had no right to do as against the public. If they did not, they were selling for less than the value of old iron what they had laid down at an enormous outlay. They had a perfect right to do that. The sacrifice of all that was the price they paid to retrieve themselves in some measure from the ruin which their own improvidence had brought upon them. They were in the position of men who threw overboard half their cargo in order to save the rest, and that ought also to have gone to the bottom too. Having entered into these districting arrangements in 1854 and 1857, they came to Parliament, and yet now they said they did not want the assistance of Parliament. He (Mr. O'Malley) was always delighted when he saw a witness in the box who was prone to making long speeches, like Mr. Baxter, and he was quite sure that any one who had had the pleasure of hearing that most able man would recognize the identity of the answer which he gave on this subject: "For many years the gas companies were only paying 4 and 5 per cent., and had it not been for the wise measure of 1860, which confirmed the districts they had assorted among themselves, they would not now be paying 10 per cent., and the metropolis would not have had the reduction in in the price of gas." After such a statement as that, he thought the ingratitude of Mr. Baxter, both by himself and his counsel, in repudiating the Act of 1860, and telling the committee it was a measure entirely for the benefit of the public, and not for the companies, was very singular, and very worthy of reproof. Now, there were many other things which they could not have done, but there was one thing which had been lost sight of altogether. One of the most signal benefits which they obtained was this: First of all, with regard to that arrangement itself, he ventured to say that if their Acts of Parliament or Deeds of Association were investigated, there was not one of the companies who were not acting *ultra vires* in making any such arrangements at all. Whether such arrangements could be made binding as between the companies was the question; but unless their original deeds of partnership, or the Acts of Parliament confirming those deeds, had contemplated such a course as that—unless, indeed, they had some such power as the Chartered Company came before the committee to ask for the other day, they were acting *ultra vires*, and their deeds were not worth the paper upon which they were written. But, putting that aside, they were in the year 1860 in this predicament. Some of the companies, like the Western, had no power to open the streets at all, but every one of them was subject to a very onerous responsibility, which was grievously complained of by themselves in 1860; their parliamentary power to open the streets was restricted to repairing old mains, or laying down service-pipes, and they were by the Sewers Act and the Metropolis Management Act precluded and deprived of the power to open streets for the purpose of laying down new mains without the consent of the various local authorities. That was a restriction which bound them all, and he would like to know how thirteen companies, relinquishing their large fields of work, and others assuming their places, and newly arranging the whole of the districts, could ever have carried that out without the authority of an Act of Parliament. One of the secretaries at the time complained of the exercise of that power by the parishes in preventing them putting down new mains, but that power was so far repealed by the Act of the year 1860, that if the local authorities now refused their consent the companies could go to the Secretary of State for the necessary sanction. So that, for the purpose of carrying out the districting, the Act of 1860 was absolutely necessary—it was an Act without which, as Mr. Baxter admitted, they could not go on. Almost all these companies were under the Act of 1847—not in point of number, but almost all in point of extent—with the exception of the Chartered Company; and every one that came to Parliament again would have to come under that Act. The Imperial Company was still further under the control of Parliament, for it was under compulsory legislation to supply 12-candle gas. Mr. Hope Scott said the Act of 1860 was a contract, and was final, and that it was the result of a compromise; whereas Mr. Denison, who was counsel for the parishes at the time, said, "We accept it as an experiment for the present." What was there in that Act which could be supposed to be final? Of all the Acts that were ever framed there never was one which bore on the face of it more complete evidence that it never was intended to be final, for it provided for and contemplated various alterations. With regard to the 10 per cent. dividend, the companies argued as though the allowance of a maximum was a contract or fixed standard of a minimum; but no two things could be more

at variance. The Act of 1847 stated the maximum, and the companies were most of them under that Act. The Act of 1860 did not deal with the question at all; there was nothing about a 10 per cent. dividend in it from beginning to end. In fact, by the 6th section an alteration of this very state of things was contemplated, and there was a perfect guard against the notion of excluding other companies from invading their territories under the sanction of Parliament. His learned friend, Mr. Hope Scott, stated that the policy of Parliament was never to interfere with companies once established. Such language he (Mr. O'Malley) had never before heard before a committee of that House. Did his learned friend forget that in 1852, without giving any return for the obligation, Parliament interfered and compelled the water companies of the metropolis to change the whole source of their supply, involving the necessity for the construction of immense new works, on the ground of public interest alone? This was done on the principle that these companies were the creatures of Parliament, and subject to the real interest of the public in all respects. Every issue of a preference share which was made against the consent of a single shareholder was an interference with private rights for the public good; and such an interference took place in every case where a gas company asked to be enabled by compulsion to take property for the erection of works in a neighbourhood which would be only too glad to get rid of them. Was it, then, to be said, in the case of a company which was in a district only because Parliament had secured to it a monopoly so strict that no one else could supply gas there, that Parliament was not to have the power of revising its regulations when it saw fit to do so? It was an unfortunate omission at the time of passing the Act of 1860 that there was no investigation of the capitals of the companies; but, at all events, that Act guaranteed them no dividend, and a short time before that their shares, with one exception, were very much below par, some of them almost at nothing. Perhaps nine-tenths of the original shareholders in those undertakings had sold out when they found their shares going so low; they had taken their chances of trade and had lost, and they were content to bear that loss and sell out. In many cases, as was known, companies were bought up by speculative adventurers when the price of shares was very low; but, at all events, there was a great change in the proprietary at the time when the shares in these companies were low. But to the persons who bought these shares when they were worth almost nothing what was the effect of the Act of 1860? Why, to put millions into their pockets. It revived the dead capital, the capital that had been thrown away by waste and improvidence, which had been lost and rendered unproductive by the battles and fights among the companies themselves. It gave to that capital a fresh existence; it made it a source of profit to the companies: so that positively the more they had wasted the richer they became. No one could contemplate the necessary consequences of the acts they had committed without knowing, as Mr. Hope Scott admitted, that the companies must have an excess of capital under the circumstances in which they were placed. Those peculiar circumstances were these: they were placed in the position of making the public pay them a profit on all the loss they had ever incurred in their mercantile transactions. But in addition to this great boon they got the principle of monopoly established by the Act. To be sure it was an unsecured monopoly, because it was a monopoly which Parliament reserved the right to change when it would; but still it was a monopoly, and so long as that Act was in force no committee sitting on a private bill would like to act in defiance of the principle laid down by it. To what did the Phœnix Company appeal two or three years ago, when a company was endeavoured to be set up in a portion of their district, but to the principle of the monopoly established by the Act of 1860? To what did those companies appeal last year when the corporation of London were ready to bring in a bill, not for confiscating their works, but for establishing a company which would give the consumers gas of 18 candles, at 3s. per 1000 feet? They appealed to the principle of monopoly established by the bill of 1860, and on that principle the bill was thrown out. They were enabled, therefore, after that Act of 1860, to come before committees, from time to time, to increase their capital, and that long before they had expended the capital in their own pockets. In 1860, or a few years before, these companies were in great depression. They might have slightly recovered themselves, but though they had carried out the districting arrangements, they did not dare to raise the price of gas. But the very moment the Act was passed, having the security of the districting principle established, and being freed from all present apprehension of rivalry, they at once raised their price to the highest maximum allowed by the Act. If that maximum had been a shilling higher, they would have raised their price 1s.; as it was they increased from 4s. to 4s. 6d., and they kept it so until his learned friend, Mr. Hope Scott, almost smiling with one side of his face while he was looking serious with the other, said: "You see that the public are now interfering with the companies just as they are about to reap the fruits of that measure." It was only when the corporation began to bestir themselves that they at once simultaneously lowered it again to 4s., and his friend claimed that that was a great merit upon the part of the companies, because they had lowered the price under the apprehension of the opposition. They told them now that their shares were going down in the market—that they were not so high as they were last year. What did that show but the universal power of the public? that those men who were engaged in money matters in the City felt that it was impossible that the arrangement of 1860 could stand any longer. It was evidence that the public had no faith in the continuance of such an arrangement as that of 1860. The companies at one bound after the passing of that Act got up to 10 per cent.; but not one step did they ever go further. Their reserve-fund they did not care to accumulate to a greater amount; but the system had been adopted of enlarging capital as the reduction of price shadowed itself forth in the accounts, thus increasing the nominal amount upon which 10 per cent. was to be paid against the public. They had been paying their 10 per cent. dividend all these years, and not giving back one farthing to the public. Again, he would ask the committee to look at that barefaced system—he could call it nothing less—of capitalizing profits, that was to add to the capital which existed in 1860, not by fresh works, but by calling up some of the profits which had been spent before 1860. Every company coming to Parliament under such a pretence as that of capitalizing profits, was in effect saying that they were not content to take the maximum dividend which Parliament allowed, but desired to go back to the expenditure out of profits in previous years and claim interest upon that. Those applications had been made to Parliament, and there being so much per cent. profit, the Imperial Company capitalized £260,000, calling it £130,000, and putting 10 per cent. upon the latter amount and adding so much to the capital, which was in direct contravention of the Act of 1860.

The CHAIRMAN said he understood Mr. O'Malley to argue that Mr. Hope Scott had proposed that the dividend of 10 per cent. should be regarded as the authorized dividend, whereas his (Mr. O'Malley's) contention was that it was intended by Parliament to be the maximum.

Mr. O'MALLEY: Just so.

The CHAIRMAN: You then point to certain sums which since 1860 have been capitalized as being a further expenditure. I should like you just to state clearly what you wish us to take from you as the point of your argument in regard both to the old capital and also to those portions of capital to which you have last directed your observations.

Mr. O'MALLEY said what he desired to urge was this, that the great question for the committee was not what the companies had expended, but what the public had a right to expect, as the reasonable amount of capital for which gas should be supplied to them. He was, therefore, pointing out the various sources which had contributed to increase the nominal amount of capital, and then he would ask them to draw the conclusion that, making all proper reductions on account of those various sources, the capital absolutely required for the purpose would be represented by the figures he should place before them. He now wished to show the committee the position in which the companies stood according to their own showing. He found by the amended paper which had been put in, that their whole capital, including loans, came to £6,835,479. He found that of those the Imperial, the Phœnix, the London, the Independent, and the Great Central had a nominal capital of £3,878,000, which was more than half. The other account showed that the Imperial maximum was on the average of the whole of their capital, because some of it was 10 per cent., some at 7 per cent., and some at 5 per cent.; he had, therefore, put that at 8·67, the Phœnix was about 8·38, the London Gaslight Company about 7·88, the Independent 7·73, and the Great Central 8·70. The other companies went to about 9. Now, taking the whole capital at 8½ per cent., which would include the whole of their lost capital and capitalized profits, what was the amount of money which they claimed as necessary to give them 10 per cent? Assuming 10 per cent. to be the ascertained maximum, that would amount to £580,000 in round numbers, as what they say they ought to have for dividend. At the present amount of gas sold that would be a very trifling fraction more than 1s. 3d. per 1000 cubic feet. If the committee upon 1,044 million cubic feet allowed 12 per cent. as leakage instead of the enormous leakage which some of the companies claimed, it would amount also to within a fraction of the same amount. If, therefore, the affairs of the companies were properly managed in the interests of the public it would make an enormous difference. He had stated that the nominal capitals of the companies amounted to £6,835,479. According to all principles which governed companies of this description, one-fourth of that capital ought to be borrowed money. That would amount to £1,733,869, and leave the share capital at £5,101,610. Instead of that, however, he found that the whole amount of borrowed capital was £545,000 (he had, of course, omitted the £130,000 of capitalized profits which the Imperial Company put down in the account); so that there was £1,188,869 chargeable as dividend-paying stock against the public, instead of that amount of borrowed money paying interest, the result being a loss to the public of about £50,000 a year. [The learned counsel on the following day stated that he had made an error in putting the loan capital at £545,000, and that it ought to have been £773,000.]

Mr. MICHAEL said he made the loan capital £973,460.

Mr. O'MALLEY said he would ask the committee to review the several circumstances he had mentioned. There was, first of all, the waste of capital which must have occurred at the early period of the establishment of the companies, and which was produced not by any legitimate reverses of trade, but by their internecine opposition among themselves. There ought to be a considerable drawback from their capital in respect of that; it was not fair they should be making a profit out of the public on account of it. To get rid of ruinous opposition, and give themselves some sort of standing, they entered into a system of districting among themselves. There ought to be a reduction from their nominal capital in respect to that. They had added what were called capitalized profits, which he should call, looking at the whole history of their course before the districting took place, their capitalized losses, in order to swell up their nominal capital; a large reduction ought to be made for that. He thought, therefore, it was not saying too much, having regard to those reductions, that if their capital was now representing merely works which were productive to the public, it would not amount to more than £4,000,000. Taking 10 per cent. upon three-fourths of that, as representing the proper proportion of share capital, it would amount to £300,000, and 5 per cent. upon one-fourth as loan capital £50,000, making a total of £350,000, which would be a fair return upon a capital sufficient to meet the exigencies of the public, and that would only represent 9d. per 1000 cubic feet upon the quantity of gas actually supplied. Mr. Hope Scott stated that in order to ascertain the amount to be allowed for dividend the committee must take into consideration the case of the most wasteful and the most unfortunate of the companies.

Mr. HOPE SCOTT denied that he had stated such a proposition.

The CHAIRMAN said he understood Mr. Hope Scott to say that if the dividends were to be uniform, and if they were at the same time to allow what he considered to be the authorized dividend, it would be brought to that test, but not necessarily that those conditions were to be understood.

Mr. O'MALLEY said it would follow that if the committee were to adopt one of the alternatives suggested by his learned friend, they would give to each company not only the benefit of its own extravagance—a profit upon its own losses—but they would give to each the benefit of the extravagance, and loss of its colleagues. The companies ought to be pretty well satisfied with what they had got already, for not only had they received 10 per cent. for each year since 1860, but they had received back dividends upon capital which was utterly lost. He now came to the last element—that of management; and here he thought there was more reason for suspecting that there was a most enormous outlay against the companies upon this than anything else. If the committee looked through one of the tables handed in, they would find that while one company was charging 15d., another company was charging 38d. Mr. Hawksley and others told them that condensation was what diminished the expenses of management more than anything else, that was, the works being condensed within a narrow place, there being a large population in proportion to their area. There was not a part of the whole metropolis where those elements were more against the company than they were in the case of the Commercial, and yet the Commercial charged only 1s. 1d. for its expenses.

SIXTEENTH DAY—WEDNESDAY, JULY 3.

Mr. O'MALLEY resumed his address in reply on behalf of the corporation. He commenced by referring to the subject of expenditure, and observed that a great deal had been said about the difference of expense between Manchester and London. He thought he had pointed out, at all events, that unless the state of things had most marvellously changed since the year 1860, when they were before the committee, the expense of all kinds of labour in Manchester, except that of stokers, was the same as in London. Indeed, taking London altogether, he might, he thought, call in aid the fact that here the amount expended in works was less than in almost any other place. He thought he had also shown, not only on their own evidence but on the evidence of last year, that London was at this moment, beyond all question behind all the great towns of England and Scot-

land in point of light, and whether they took the light itself or the price of it, was behind them all. He would just illustrate a point which he left untouched on the previous day, the effect of their financial proceedings on their management. Every increase of work beyond what was necessary for the supply of a district multiplied the expense of distribution of the gas, the cost of management, and all the things that went into the management expenses. Now, could there be a greater incentive to recklessness on the part of the management of those companies than the fact that they had all reached long ago the 10 per cent. dividend, and that they had no interest in reducing the expenses anywhere? But they saw that under the present system, in which all the shares were allotted to the shareholders in those companies, by merely getting some new works established and getting an increase of capital, they could, by paying £50 themselves to the erection of any particular works, become shareholders for that £50, which did not go into the market at all; and they had the evidence of Mr. Hawksley and the share list of last year to show that, when they subscribed that £50, they would go into the market and get £80 instead; so that they could put £30 into their pocket as a premium for lavish expenditure on their works. He would call their attention to two places amongst the many that had been mentioned, in which gas was supplied of a superior quality at a low price. At Nottingham it was 17-candle gas at the price of 2s. 11d., and at Manchester it was 21 candles, at 3s. 8d. The Imperial Company supplied the public lights to Marylebone, and that worked out to 2s. 11¼d. per 1000 feet, and that, it would be remembered, was a light of from 14 to 14½ candles; and if they added 4 candles to that to make it 18 candles, they would find them supplying for 3s. 3½d. 18-candle gas. And that was the largest of all the companies. Then, again, there were two companies—the Independent and the South Metropolitan—who were charging 3s. 4d. for 14-candle gas, and for 4 candles more that would only come to 3s. 8d., which was within 2d. of what the promoters asked for. He said they were entitled to have gas for what it could be reasonably produced for. He trusted he had shown the committee very clearly that, under proper management and proper regulation, and with a fair distribution of capital, those companies could now, even leaving their nominal capital untouched, realize a large dividend at the prices which he had stated. But that was not the real question. The real question, as Sir Stafford Northcote had well put it in one of his letters, was to reconcile the existence of those great monopolies with the interests of the public. The committee must take care that, while they secured a monopoly which was advantageous to all parties when it was a well-regulated monopoly, was so regulated that it should not deprive the public of the reasonable advantage which they would derive from a free competition in an article of trade. They must take care that the monopoly did not leave the company to impose on the public such terms as they dared not impose if they were open to competition from other companies. Every farthing they put on the public beyond that was a tax imposed on the public—a real arbitrary tax for the maintenance of the shareholders, and the maintenance of those shareholders who had received back millions of money from the public which they had thrown away by their own extravagance; and many of them had even received capitalized profits which never were capitalized in the time of their holding their shares at all, but which, if they ever had any existence at all, went to reduce the price at which many of the present shareholders bought their shares. The public had been taxed enough; the public had paid the companies amply, and he was sure the committee would not do them the injustice of continuing the tax upon them now, a tax beyond what they could in reason and fairness be called upon to pay. A great deal had been said about vested rights. He was standing there for vested rights—that vested right which every man had of buying in the cheapest market, and of getting rid of an article on the most reasonable terms. Sir Stafford Northcote put it to the companies whether they would like to be placed in the same position they were in before the passing of the Act of 1860. Why, the committee knew that they would not; it was mere hypocrisy. Then he had seen in some of the small newspapers a clamour about widows and orphans. He was appealing to the committee on behalf of the poor mechanics, and for every class of people in the metropolis. They had been told in the course of the inquiry that the higher the quality of the gas the more light and the less heat it gave. Indeed, that theory was carried to such a length by Mr. Hawksley that if it had not been for the strong and sudden repression of the committee he would have gone into a calculation to show that bad gas was the best for cooking purposes. But it showed this, that bad gas generated a large quantity of heat; that the very material in it which tended to diminish the light tended to increase the heat, and the consequence was that a number of persons at the West-end of London did not use gas in their houses at all, because, in order to get the light they required, they had a large quantity of heat evolved which they could not use. But that was nothing compared to the case of artisans, watchmakers, and needlewomen, sitting up, perhaps, half the night, or working in the dark and dingy houses of this great city where they required gas all day. Just see what a boon it would be to them to have an increased quality of light, and what a right they had to demand it. They were now forced, in order to get as much light as their nice work required, to fill their little workshops with so much of this hot gas that they might be seen emerging from them, in many parts of the City, actually like stokers coming up from the engine-room of a steamboat. It was poison to those people to be forced to work sweltering all day in those hot rooms, and they came now to the committee and asked that they might be allowed the enjoyment, at a less price than they now paid for gas, of a light which would not expose them to the poisonous atmosphere they were compelled to breathe. All the companies were the creatures of Parliament, and was Parliament to deny the public that which was their right because it was said to be inconsistent with the interests of these companies? The bill was now in the hands of the committee. What the Government might do it would do on its own responsibility; what Parliament would do it would do on its own responsibility; but he was then before a tribunal from whom he was sure the public would receive justice. They put themselves in their hands, and asked them above all to give them the light which they demanded, and not only to give them the light which they asked for, but to give it to them at the price they named, or, at all events, as cheaply as they could reasonably have it.

Mr. DAVISON said he had a few observations to address to the committee on the part of the Board of Trade. He understood that the first question they were about to consider was the question of price, on clause 35. With regard to the form of that clause, he might say that in its present state it was an amended clause; it was amended somewhat in a hurry, in order to avoid delay in bringing the matter before the committee. If the 10 per cent. remained there it would give that dividend to the companies on the whole of their capital, on a portion of which they were now only paying 7½ and 5 per cent. Of course, nothing of the kind was ever intended, and he should take care to have the 10 per cent. restricted to the capital now authorized. The clause also provided a sliding scale, giving an additional rate of dividend in proportion to the increase of illuminating power or the decrease in the price of gas. From the correspondence, this seemed to have been agreed upon between Sir Stafford Northcote and Mr. Beck on behalf of the companies, but Mr. Hope Scott in his address said the sliding scale was not a thing which the companies desired at all. On behalf of the Board of Trade, he (Mr. Davison) would say that it was not a thing to which they were wedded, but they thought in proposing it that it might act as an inducement to the companies so to carry on their manufacture as to enable the consumers to get a decrease of price.

The CHAIRMAN said he should like to have it clearly understood what all the parties said upon that point. He understood Mr. Hope Scott to say that the effect of the Act of 1847, incorporated in the Act of 1860, was to make 10 per cent. the authorized dividend, or, to use the words of the Act, "the prescribed rate; that though the committee were not bound by anything like an understanding or compact, he considered the Board of Trade were bound not to go on with the bill unless that condition were observed, and that he did not desire to have anything beyond the 10 per cent. But Mr. O'Malley put it that the committee were not to start with the 10 per cent. as a prescribed rate of dividend, but to ascertain at what price gas could be reasonably furnished, and to put into the bill the price they so ascertained.

Mr. DAVISON said it was no part of his duty to comment on the evidence which had been given on either side. That was essentially a question for the consideration of the committee, and on the part of the Board of Trade he was quite certain they would be perfectly satisfied with the decision of the committee. He believed he represented the views of the Board of Trade when he said that, without in the least desiring to fetter the inquiry of the committee, the Government felt bound under all the circumstances to have reference to the correspondence which had taken place with the companies, and to accept 10 per cent. as the basis of legislation, leaving it to the committee to fix the price of gas and the illuminating power at what, in their opinion, would enable the companies to earn something approaching that maximum.

The CHAIRMAN said nobody but the House of Commons could bind the committee, and they had not given them any instructions on the point; therefore, unless they bound themselves they were not bound in any way But he wanted to know the relative opinions of the parties. Mr. Hope Scott had a certain expectation, founded on the correspondence, and he interpreted the words "prescribed rate" in the Act of 1847 to mean, in connexion therewith, that the committee should give a price, combined with an illuminating power, which should make the 10 per cent. not a maximum but an authorized dividend.

Mr. DAVISON said he could not accept that from his learned friend. He thought the remark did not mean that it was to be an absolute dividend, but left it open.

The CHAIRMAN said the most important thing was this: Mr. Hope Scott stated that he expected the Board of Trade to withdraw the bill if his condition was not complied with.

Mr. DAVISON said it appeared to him, and it was the opinion of those who instructed him, that all they were bound to do was this: they were bound not to proceed with the bill unless the 10 per cent. was retained, on the same basis and on the same terms as it appeared in the 30th clause of the Act of 1847.

Mr. LEFEVRE: I should like to know if the Board of Trade are prepared to throw up the bill if we insert a price which they think would not give the companies a 10 per cent. dividend.

Mr. DAVISON: I should say not, because they have allowed the matter to come before the committee, believing in your efficiency to settle it. They have told you what they feel themselves bound to do—to throw up the bill if you altered the 10 per cent., say into 8 per cent., and fixed that as the maximum, or rather if you did not allow them to retain the power in clause 30 of the Act of 1847, and altered that by putting 8 per cent. when 10 per cent. stands in the clause. In that case I think I am right in stating that the Board of Trade would feel themselves bound not to proceed with the bill. But with regard to the price and illuminating power, that subject has come before you, and, of course, in promoting this bill they promote it upon the understanding that this was matters to be inquired into by the committee. If you put an illuminating power and price in clause 35, the Board of Trade will assume that it is such a price and illuminating power as would, in the judgment of the committee, enable the companies to earn that maximum of 10 per cent. With reference to the question of capital, it seems to me, after hearing my learned friend, Mr. O'Malley, and reading a good portion of the evidence, that a good deal of the evidence, and many of his observations with regard to the price and illuminating power and price, and more especially the price, depended upon some disturbance of capital. Now, sir, I am instructed to say, and it appears clearly on the face of the bill, that there is no intention on the part of the Board of Trade to interfere with the authorized capitals of the companies in any way whatever. There is an important machinery in the bill, from clause 36 to clause 41 inclusive, for auditing the accounts, and there would be no great difficulty in seeing that the authorized capitals had been raised and spent. Mr. O'Malley seemed to assume that the Imperial Company have converted a sum of £130,000 of profits into stock. Either that is capital or it is not. If it is not the authority we should put in force would place it to the one or the other account, and for the future justice would be done. But with regard to disturbance of the capital now authorized, there is no desire for it, never has been, and there is nothing of the kind in the bill.

The CHAIRMAN: Do you mean that the auditor, under the 37th section of the bill, is to have the power, by a certificate, to repeal an Act of Parliament which has already dealt with the money?

Mr. DAVISON: No, sir; but to see that a company having power to raise say a million of money, have actually raised it out of the shareholders pockets, and that it is there, represented by certain works as capital. If it is not stringent enough, the desire of the board is that the auditor should have the fullest power to investigate the matter, because it is alleged, over and again, whether or not without foundation is another matter, that there is something in the accounts which has never yet been found out.

Mr. GROVE, on the part of the Metropolitan Board, wished to call the attention of the committee to one matter. The chairman had stated more than once that in settling the question of illuminating power the committee would bear in mind the basis of the Act of 1860. But unfortunately the standard of 1860 was no standard at all, for it neither gave the size of the holes in the burner, nor the aperture, nor the diameter of the chimney, nor the material of the burner.

The CHAIRMAN said Mr. Davison stated the difference to be 1½ candle from the standard in the second schedule.

Mr. GROVE remarked that some said it was more, some less. All he asked was that the committee would bear in mind the possibility that there would not be an agreement as to the amount of candles which the improved burner gave *plus* those which the old burner gave.

Mr. MICHAEL said he should contend that there must be two schedules

if two kinds of gas were to be supplied, as the burner which was suitable for testing gas of a comparatively low illuminating power was not applicable for testing cannel gas.

The CHAIRMAN said all the committee were concerned about now was, that when they used the same word they meant the same thing. At present, when they spoke of illuminating power they used the definition of the Act of 1860.

The committee-room was then cleared. After some time the parties were called in again.

The CHAIRMAN stated that the committee had unanimously adopted the following resolutions:—

1. That the supply of gas in London ought to be controlled in favour of the consumer, either by the means of an effective competition, or, if the system of an exclusive supply be maintained, by the means of effective regulations.
2. That neither of these conditions is fulfilled by the system of exclusive supply now in operation, under the arrangement sanctioned by the Act of 1860.
3. That no bills for the establishment of a competing supply having been referred to the committee, the question of providing for the establishment of control by the means of competition does not immediately arise.
4. That the committee regard the establishment of a due control by an amendment of the Act of 1860, upon the system of exclusive supply, as preferable to the future introduction of competing works, and are prepared to settle the present bill accordingly, if that course be consented to by the parties.
5. That the extensive powers asked for by the Chartered Company and by the Imperial Company respectively, in the bills now before the committee, are calculated to throw obstacles in the way of future competition, and that the committee are not prepared to entertain them until the general system of supply shall have been placed upon a more satisfactory basis.
6. That the settlement must provide for the improved administration of the system by reduced expenditure, and the committee think that by the amalgamation of some of the companies, and improved arrangements of the districts, that object may be easily attained.

Mr. DAVISON said he presumed the committee would give the promoters a full opportunity of considering the resolutions.

The CHAIRMAN: Certainly.

Mr. HOPE SCOTT said he was quite unable, at the present moment, to express any view, on the part of the various companies which he represented, more especially because, upon the question of amalgamation, expressions were used in the resolutions of the committee which might press upon some of the companies and not upon others, and which would, therefore, render it difficult for the companies to come to any united action. He observed that, if the committee would give any further information on the question what amalgamation of the companies, and what improved arrangements of districts they had in view, that would very much facilitate the action of the companies.

The CHAIRMAN said there were many questions which might arise, and which, if they came to be contested, they must do their best to settle. Although the companies no doubt differed in their special interests, it was, after all, a subordinate degree of difference, because the main question had been fought by the companies unitedly.

Mr. HOPE SCOTT said, in regard to that observation, he might be allowed to say that they had not been discussing any one of those points upon the evidence or upon the bill, and therefore the united action of the companies had been directed to a different subject matter from that comprised in the resolutions.

The CHAIRMAN said he might state at once that it was not the intention of the committee to proceed by direct and compulsory legislation to touch prices already sanctioned by Parliament in a hostile manner. That was the reason of the difference which the learned counsel had observed; but subject to that observation the committee would be very sorry if this long inquiry, to which they had devoted a great deal of pains, should end in nothing but a report of their opinion to the House.

Mr. HOPE SCOTT said the companies shared with the committee the idea that it was most desirable a settlement of some kind should be come to. Their property was materially affected by the present agitation. At the same time, when they met as thirteen companies, and when out of those companies no one knew who was to be amalgamated with his neighbour, or what was to be taken from his district, there would be a great amount of difficulty.

The CHAIRMAN said the subject was necessarily a difficult one. The committee had decided that they would not, in the absence of consent, proceed by hostile legislation to touch prices already sanctioned by Parliament.

Mr. HOPE SCOTT: Or capitals, I apprehend, sir?

The CHAIRMAN said that being so, the question remained whether they might not from this long inquiry be of use to the companies and the public by proceeding. Nevertheless, if not, they must report their views upon the subject to Parliament.

Mr. HOPE SCOTT said the chairman kept him in the dark as to the principle upon which the amalgamation of some of the companies, and the improved arrangement of districts, should proceed.

The CHAIRMAN remarked that the principal controversy before the committee had been what price should be fixed, and in the price what illuminating power should be fixed; then, whether that price and illuminating power should be uniform, or whether they should think it right to apportion them in a schedule to the different companies; then, whether the present scale of working expenditure should be taken as a datum, or whether the working expenditure might not be reduced. The committee were of opinion that the present working expenditure might and should be reduced; but it was for the companies, in the first place, to consider amongst themselves what would be the most convenient mode of attaining that object. If the committee received no assistance from the parties, they would not pass any one of the bills before them, but would report their opinion upon the general subject to Parliament.

Mr. HOPE SCOTT said, considering how very important the questions raised by the resolutions of the committee were, it would be an immense assistance to an amicable settlement if the committee would be good enough to shadow forth which of the companies in their opinion should be amalgamated, and what the improved arrangements of districts were which they pointed at.

The CHAIRMAN said if the committee had to act as arbitrators and settle the bill with the price and illuminating power, they would first have to determine whether they could secure uniformity, which was in itself an object; if not, what schedule they could make for the different companies. They would certainly take into consideration how far the working expenses in London exceeded the working expenses in other places, and if they found that the working expenses at a certain price caused the dividends to the shareholders to be less, they could not help that; but the companies must see whether, by new arrangements, for amalgamation, perhaps, they could not themselves help it by reducing those expenses.

(*To be continued.*)

HOUSE OF COMMONS.

METROPOLIS WATER SUPPLY.

SEVENTH DAY—TUESDAY, MAY 28.

EAST LONDON WATER-WORKS (VARIOUS POWERS) BILL.

(*Continued from page* 628.)

Captain Tyler's report was handed in, and gave rise to some discussion as to whether Mr. Cripps would address the committee upon it.

Mr. WILKINSON understood that Captain Tyler was to attend the committee this morning.

The CHAIRMAN: Captain Tyler gives in his report in writing, and I do not think we should wish to examine him, he having deliberately stated all his conclusions. I think it would be the more convenient course to proceed with the other bill, and then Mr. Cripps will have an opportunity of reading the document and making any observations he pleases upon it.

The CHAIRMAN, addressing Captain Tyler, said that, having received his report, they would not require any evidence from him. They would take his report as the expression of his views and opinions.

Mr. WYATT then applied to the committee for an adjournment of this case under very peculiar circumstances. He said he had the honour to appear for the conservators of the river Thames, and to justify the application it was necessary that he should make a short statement to the committee in connexion with this application and the connexion of the conservators. Perhaps they would recollect that in the year 1865 there was a lengthened inquiry into the condition of the upper part of the river Thames, from Staines to Cricklade, and the result of that inquiry was a report from the select committee that the works were in a very ruinous state, and that the whole concern was bankrupt. That inquiry led to a transfer of the upper navigation to the conservators of the river Thames. They took office a few months ago, and were promoting a bill in the present session for extending the provisions of the Act of last session to a higher part of the river, which was, for technical reasons, omitted. The conservators, since they had taken office, had been very much occupied in surveying the river and seeing what was really necessary to be done; and when he told the committee that there were 80 miles to be surveyed, and the principal portion of this large but bankrupt undertaking to be inquired into, it might be imagined that their hands were very full, and they had not time left to consider what was best to be done under the provisions of an Act of last session, nor were they aware of the capacities of the river as to the supply of water and so forth to the different water companies. He mentioned this because he had no doubt it would be made a subject of complaint by the promoters that they had been seeking to get from his clients since October their views with reference to this bill. This bill was deposited, and, with other important matters, it received the attention of the conservators, and from that time to the present there had been a negotiation going on between the East London Water Company and the conservators with reference to this bill. The conservators were a public trust, having no pecuniary interest whatever, and having no power to apply moneys other than for the purposes of navigation. They were considering whether they could, with justice to the other important interests confided to them, allow the East London Water Company to take water from the river. It ultimately ended in this, subject to the sanction of the committee and the evidence which would be given here: they agreed upon a price which the company should pay for a given quantity of water; but there was this difficulty in the arrangement, the East London Company wished to take a given quantity at a given time, and to pay so much for it, and then within another given period they were to pay an increased rent, and then at a further period the residue of the increased rent. The only difficulty that his clients felt was as to the periods within which the increased rent should be paid, for this reason, they being trustees for the public could not bargain away (if he might use the expression) any surplus water that they might have for so long a period as was proposed. He was proposing an adjournment for this reason, that it was only late last night that the promoters declared that the arrangement must be at an end, and that they should appear here and submit such clauses as they thought fit. Under these circumstances he hoped the committee would not think it unreasonable that he should, at least, have an opportunity of communicating with his clients and instructing counsel.

Mr. HOPE SCOTT said he appeared for the promoters of the bill, and they certainly objected to the postponement, for the reasons given by Mr. Wyatt himself. This had been going on from October last, and a final settlement was supposed to have been come to, when they were informed that it was not so yesterday afternoon. It was quite true that the conservators did not seem to have any but the public interest; but they did not seem to have any private responsibility. Surely, between October last and this day they might have settled the very simple question as to the new company being in the same position as the old companies.

The CHAIRMAN: It would seem, from Mr. Wyatt's statement, that there is no objection to the general preamble of your bill, but that it is a question as to the conditions of your taking water from the Thames. If that is the case, there will be ample opportunity of considering it when we dispose of the preamble of the bill, and in disposing of it we shall not prejudge in any way the examination of the question which we shall consider afterwards, if we adopt the preamble of the bill. Of course, if we do not adopt the preamble, there will be no necessity to hear Mr. Wyatt, and, of course, in the event of our passing the preamble, and in the event of his not agreeing, he would have ample opportunity to be heard upon it.

Mr. WYATT said they would most decidedly oppose the preamble unless they could come to some arrangement with the East London Company.

The CHAIRMAN: But we should not pay any attention to an opposition which was not really against the preamble of the bill, but was only for the purpose of obtaining some clauses.

Mr. WYATT: But that is not so. They are a public trust.

The CHAIRMAN: We perfectly understand that; and the public trust have decided that there is no objection, so far as they are concerned, to the water being taken from the Thames, provided the conditions as to time and mode, and the sum to be paid for taking it, are satisfactory and proper. If you cannot settle that, we shall have to decide that for you. It is a question of clauses.

Mr. WYATT: The conservators, by their petition, say that it is impossible to allow any more water to be taken, unless the requisite works were executed.

The CHAIRMAN: Exactly. That is quite a question of clauses. They say that *sub modo* merely they object. I think that there is no occasion to postpone the consideration of the preamble of the bill; but when the question arises as to what their conditions should be, you will, of course, have the opportunity of being heard, and you may take that opportunity, and probably will instruct counsel.

Mr. HOPE SCOTT said, with the chairman's permission, he would proceed

to open his case. The object of his learned friend's request to him to pause was a very benevolent and proper one; it was to intimate on behalf of the Metropolitan Board of Works that saving, as he understood from his learned friend, such question, for instance, as this new supply, or any arrangement with the conservators not being a bar to future legislation, the opposition of the Metropolitan Board of Works would be principally, if not entirely, directed to the construction of the reservoir in Finsbury Park. That he believed, practically speaking, disposed of the opposition to the preamble, because the parties who petitioned, and who remained here as petitioners, and who were very few, compared to the original number, were almost all of them upon matters of clause. Still, he thought it was his duty to state briefly the objects of the bill, and to support the preamble, not knowing exactly what might turn up in the course of the inquiry. Now they were already so familiar with the general question, that he should proceed at once to the work, and state what their immediate want was, and how they proposed to supply it. They had formed a proximate estimate with reference to the company's supply. They had had some of those figures before, but he would repeat them so as to give point to their immediate object. In 1856 the demand on the company, on a daily average over the whole year, was 14,500,000 gallons. In 1861 it had risen to 17 million gallons. In 1864 it had risen to 18 million gallons. In 1866 it had risen to 19,500,000 gallons, and if the same rates of increase continued, in 1871 the demand upon the company would be for a daily average throughout the year 22 million gallons. In 1876 it would be 24,500,000 gallons, and in 1881 it would be 27 million gallons; and he might mention here that he believed the district which was supplied by the East London Water-Works was far more capable of extension than any of the districts which were supplied by any of the Thames companies at this moment. Having stated this rate of annual daily average, he had next to remark that the annual daily average was not a true representation of the needs of the company supplying a large population, because, as the committee were well aware, there were certain periods of the year when there was a considerable excess per day in the amount of water required, and therefore he would give next the daily average of three months. In 1866, in the month of July, the daily average was 20,583,000 gallons; in August, it was 22,626,000 gallons; in September, it was 20,781,000 gallons, showing throughout those three months of daily average of more than 10 per cent. above the year's daily average, owing to the great pressure at those particular seasons. In 1864, when the water was short, they fell very much below that which was necessary. In 1866, from the wetness of the season, they were able to meet this extraordinary pressure of the dry season. He would now go to 1871, and assume the rate of increase to be the same as before, and they would find this to be the case—the daily average need in 1871 over the whole year would be 22 million gallons, and with the 10 per cent. extra for summer demand, which would then amount to 2,200,000 gallons, in all 24,200,000 gallons would be the maximum demand upon us in the periods of drought, which, of course, were periods when we wished most water and when we have the least water to give. Now he would take 1864 as showing to what we might be reduced in taking merely from the Lea. In the year 1864, in the summer, the yield of the Lea was only 17,836,000 gallons. So that in 1871, from this mode of testing the question, there would be a daily deficiency in the dry months of 6,764,000 gallons. Of course, under the bill which was still pending, they took an increased power of storeage by reservoirs, but that increased power of storeage was only equal to 5,500,000 gallons daily over the 92 days comprised in the three driest months, and therefore, in 1871, they would be short by the difference between 5,500,000 gallons and 6,750,000 gallons. And if they went on to the year 1876, by the same test, the average daily demand over the year might be taken at 22,500,000 gallons, and with 10 per cent. extra for the summer months, which would be 2,450,000 gallons, they would have a need for 26,950,000 gallons. And supposing their supply from the river and from their reservoirs to be what he had taken it at in the former case, taking the minimum he admitted of the year 1864, they would only have 5 million gallons to set against a deficiency of 9,514,000 gallons. Upon these grounds they found it absolutely necessary that they should make provision for a more extended supply. The matter had been long under the notice of the directors, and had been very much considered by the engineers. The alternatives which had been suggested had been three, apart from the Thames supply. One was that of sinking wells in the chalk; another was that of bringing water from the Ouse in Bedfordshire; and a third was to construct very considerable storeage reservoirs in the valley of the Lea. Of these the first, namely, the sinking of wells in the chalk, would have been the least expensive, and in that respect, of course, would have had recommendations in the eyes of the directors and of the shareholders; but, unwilling to trust to anything but actual experience, the company consulted Mr. Morris, the engineer of the Kent Water-Works, those water-works being supplied entirely by wells in the chalk, and he in a report which he made explained to the company that everything with regard to the supply of water from chalk by wells depended upon the particular stratification, and he summed up his report to the directors in this manner:—"Having, after a close examination of the ground, to the best of my information answered the questions put to me, I have now to impress upon your board that there is no absolute certainly in obtaining any given quantity of water from the chalk in any locality. Though I have been uniformly successful in the selection of spots widely distant in the Kent district for sinking artesian wells, yet there are points intermediate where large sums have been expended with very limited results. For these reasons, though I anticipate water in a considerable quantity, yet I should hesitate to recommend any large expenditure for a permanent water supply from Grays and its neighbourhood before experimental examination has been made." That view of Mr. Morris had been also taken by Mr. Bateman, who was called in this year by the company to report not only upon that, but upon other matters. He found that in his report he said: "The first is to endeavour to obtain a supply of water from the chalk basin which lies beneath your works, or to obtain it from the water pumped from the same basin at Grays. It is probable that you will be able to abstract as much water from the chalk beneath you as you could obtain by going 17 miles for it to Grays, but the result of sinking wells in the chalk would be very uncertain, and could hardly be expected to yield more than a million gallons per day for every well which was sunk. You want 8 million gallons to put you in a safe position, but I fear nobody would be bold enough to hold out the expectation that you would obtain more than half this quantity." The scheme of bringing the Ouse to supply their works was soon given up, because the quality of the water was found to be unsatisfactory. the cost considerable, and the supply inadequate to meet the future probable demands upon the company. There remained, then, the third idea, which was that of very great storeage on the tributaries of the river Lea. It seemed to have been an idea entertained by Mr. Rendell, when he acted, if he mistook not, as engineer for the trustees of the river Lee and that scheme had, been carefully examined into, and rejected both by their engineer, Mr. Bateman, and also very much discredited by the River Commissioners. Mr. Bateman said of it: "I find that Mr. Greaves, who has been carefully and anxiously considering the subject for many years, has suggested as a possible means of increasing the quantity of water at your command, the construction of additional reservoirs, to be fed by flood waters, so as to create a total storeage of 700 million gallons. With so large a quantity, the period during which it would be necessary to draw from store would have to extend beyond the 60 days considered as equivalent of your present storeage. Supposing it was required for 120 days, it would make your total supply, during such a drought as occurred in 1864, 21 million gallons per day, being just equal to your present demand. The cost of providing this additional storeage, including the purchase of land on which the works must be constructed, it would be from £250,000 to £300,000; and even if you were to expend this amount of money you would be unable to meet the requirements of the district you supply on the recurrence of the first severe drought. It is obvious, therefore, that you must look elsewhere for the additional water which you require to place you in a safe position." The River Commissioners in their last report, which they had before them, dealt with the question in a similar manner. At page 9 of the report, after the tables that were given there, they said: "These returns show, as regards the valley of the Lea, that in a dry year not quite one-half the depth of rain falls as in a wet year. During dry years much less water flows off the surface of the ground, and spring water is very much reduced in volume. The permanent water capacity of the Lea valley must, therefore, be measured by the minimum volume of rain falling on its surface, rather than by the average. Like the river Thames, the river Lea has been navigable from time immemorial, but while on the Thames the navigation works had fallen into ruin, through the abstraction of trade by railways and through neglect, on the Lea the weirs, locks, and other works are at this time in better order, the navigation is more efficient, and the trade is greater, than at any former period. The drainage area of the river Lea, as stated previously, is in round numbers 500 square miles; the area of the Thames, including the Lea, is about 5000 square miles, so that the relative areas of the two rivers are as 9 to 1; but the areas from which water is drawn from the Thames and Lea respectively, for the supply of London, are as about 8 to 1. Five great water companies draw water from the Thames for the west and south of the metropolis, and two great water companies abstract water from the Lea for the supply of the eastern and northern parts of the metropolis. The minimum dry weather flow of the Thames at Teddington Lock is about 350 million gallons of water in each 24 hours." That was after the abstraction, he was told, by the water companies. "The extreme dry weather flow of water down the Lea, at Lea Bridge, is little above 40 million gallons in each day of 24 hours." And this was a curious point, which he thought was first raised by them. "About one-half of the population of the metropolis receive their water supply (some 48 million gallons per day) from the Thames, whilst the other half of the population is supplied with about 38 million gallons from the Lea (as distinct from springs in the valley of the Lea, the New River Company supplying a population of 840,000 persons, and the East London Water-Works Company a population of 675,000 persons, the two companies together supplying 1,515,000 persons out of 3,037,991, the entire population within the metropolitan area." Showing that, in the most condensed form which could have been adopted, the relative capabilities of the two drainage areas, and how one-half of the actual demand for water was drawn at present from the considerably smaller area. Then, again, at page 21, they dealt particularly with this question of the storeage:—"With regard to the capability of the river Lea to meet the increasing demand for water supply in the eastern districts of London, the entire volume of water daily drawn direct from the river Lea amounts to 38 million gallons, the New River Company drawing upon an average 18 million gallons, and the East London Water-Works Company 20 million gallons. In very dry seasons some difficulty is experienced by the latter company obtaining their customary volume. It may, therefore, be taken that no dependence can be placed upon an increase of the supply from the river without the construction of impounding reservoirs, on a much larger scale than those now in existence. The construction of such reservoirs has been a matter considered by the Lea Trust and by the water companies. The Marquis of Salisbury explained to the commission a system of impounding reservoirs, designed by the late Mr. Rendell for the Lea basin, to be constructed on the Lea itself, and others on the Ash, Rib, and the Amwell Marsh, capable of holding some 6,212,500,000 gallons of water."

The CHAIRMAN: Do you happen to know what the cost of those reservoirs was?

Mr. HOPE SCOTT said he had not an idea, but very likely their engineer would be able to tell him. It is questionable whether these chalk valleys can afford sites for reservoirs to hold such large volumes of water, unless great expense were incurred in puddling. In Mr. Morris's opinion it would be very difficult to make large reservoirs above Hertford. Extensive reservoirs might with ease be made below the point where the Lea passes from the chalk on to the London clay. The reservoirs of the East London Company, in which there is storeage for 170 million gallons of water, cover 120 acres: but reservoirs to hold the volume of water contemplated by the late Mr. Rendell would probably require an area of 2000 or 3000 acres, and, though large reservoirs may be made available to reserve flood waters, yet, if in dependence of such a store a corresponding enlargement were made in the area of the supply, then, in the event of several dry years following each other, the continued drought would most probably end in the exhaustion of such store, and consequently in temporary failure. Well, those different reasons, of course, had weighed very greatly with them, and having called in Mr. Bateman practically to decide the question, he recommended the Thames in language which was characteristic both of himself and the peculiar circumstances of the day. With regard to the water supply, he said—"The other source is the river Thames, and I at present see no other course open to you than boldly to resort to this river. I think you will agree with me that even this will be but a temporary expedient, and that, before many years pass over, a large and comprehensive measure for the full supply of the whole metropolis from a distant source must be carried out; but, as the principal outlay in obtaining water from the Thames will be from cast-iron pipes, which may be made available in any future work, there will be a less amount of useless expenditure by adopting this course than if you went to any other river (if such a river could be found), and had to construct conduits, reservoirs, or any other works which could not be made part of a great scheme hereafter." In another paragraph he said—"Should you go to the Thames, I would recommend you to apply for power to take at least 10 million gallons a day. The five companies who are at present to take water from the Thames only withdraw on the average about 60 million gallons a day out of the 100 millions which they are authorized to take, although I believe their occasional

draught amounts to nearly 80 millions. An extra 10 million gallons a day can make but little difference to the Thames, particularly if it be considered, as I believe it ought to be, a mere temporary abstraction. This would put you on a par with the other water companies, and give you about as long a lease of life before you all have to seek for other sources, if nothing were done in the meantime." That was characteristic, but of course they took very sound advice for the present, and they did not admit altogether Mr. Bateman's views with regard to the future. It was under these circumstances that they came to ask a further supply from the Thames. He had already drawn their attention to the minimum flow of the Thames, which was stated by the River Commissioners at 350 million gallons of water. The evidence given by Mr. Leach, the conservators own engineer, on the Thames Navigation Bill of 1867, on the 8th of April, that 380 million gallons was the minimum flow which was ever measured at Teddington Lock—that was below the point of water supply—which made a difference of 30 million gallons on the figure assumed in the River Commissioners report.

The CHAIRMAN: Does he use the phrase, "the lowest ever measured"?

Mr. HOPE SCOTT: The minimum ever measured in the driest year. That was in 1864, and he thought that there could be no doubt about it; his learned friend remembered it, but he saw that it was printed in the evidence at 38 million gallons. That, of course, was not the figure; it was 380 million gallons.

Mr. HEADLAM: We had it somewhere in evidence that the quantity taken was between one-seventh and one-eighth of the whole flow. I think that that was Mr. Bazalgette's evidence.

The CHAIRMAN: That is the average quantity.

Mr. HEADLAM: It was stated that the greatest quantity taken was never more than one-seventh or one-eighth of the whole flow of the river.

Mr. HOPE SCOTT said the statement that 70 million gallons were taken from the Thames daily was not accurate. They had the companies returns put in and proved, which showed that in 1866 they were drawing as follows:—Chelsea, 8 million gallons; West Middlesex, 8,208,168 gallons; Grand Junction, 9,317,055 gallons; Southwark, 12,502,000 gallons; and Lambeth, 8,950,000 gallons, making a total of 46,977,223 gallons. They had power to draw 100 million gallons, but this was the average daily annual draught. Mr. Leach possibly was talking of some exceptional draught when he put it at 370 million gallons. The increase in ten years had been this:—Chelsea, 5,532,000 gallons; West Middlesex, 6,500,293 gallons; Grand Junction, 12 million gallons; Southwark, 3,110,000 gallons; and Lambeth, 5,391,000 gallons, being a total increase in the ten years of 32,737,776 gallons, or 40 per cent. nearly in the 10 years. If they took their present average annual daily draught at 47 million gallons, and added 40 per cent. for the next decennial period to 1876, they would get just about 66 million gallons; and if they went from that to 1886 on the same principle, they got quite 92 million gallons; so that it would take 20 years from this time at the ratio of increase which had governed the draught during the last ten years before they arrived at their maximum of 100 million gallons. Now, of those places some were incapable of increase to any considerable extent, whereas the East London Company was, as he had already stated, the most increasing neighbourhood, and yet their calculated draught would only reach 10 million gallons from the Thames about the year 1881, so that 20 years hence, or call it 1880, the question would become a more pressing one, and some new arrangement (but not necessarily from mountain lakes) would have to be considered. Now that was the case which they made in support of the bill which proposed works of a very simple kind, one portion of them destined to convey the Thames water into their reservoirs made and to be made under the powers of the other bill, and to some extent common, and the other intended to draw water, to be filtered near the spot at which it was taken, and conveyed directly into the distributing-pipes after being filtered. The place at which they proposed to pump was at Sunbury. They did not go to the immediate neighbourhood of the existing works, because they occupied by their mains the accesses to the river in such a way that they could not conveniently insert other mains. That took them so much higher up the river; he did not dwell much upon that, but if there were any question of a more pure source of supply they had the advantage of being somewhat higher up. The highest up companies at present are at Hampton, and the East London Water Company's proposed pumping-station at Sunbury was a mile and a half above that. The estimate for these works was £260,000. He did not know that he had occasion to state before what, however, they had in figures before them—viz., that the existing share capital of the East London Company was £1,300,000, and that they had no loans whatever; no doubt their resources were a perfect sufficiency to carry out both this and the other bills. Now he called attention to the report of Captain Tyler. At page 29 he said—"Looking to the continued increase in the district and in the demand, and to the possible contingency of another dry season, they are naturally apprehensive for the future. They are accordingly applying to Parliament for power to enable them to supplement their supply to the extent of 10 million gallons daily from the Thames, and, as I have already explained, to increase their means of storeage in the neighbourhood of the Copper Mills for the Lea, so as to be able to retain there a 25 instead of an 8 days supply. It is most important, in the interests of the district, that they should obtain both this supplement to their supply, and this extra means of storeage. They are urgently required as temporary remedies, whatever decision may be arrived at with regard to the more comprehensive schemes which are now before the Royal Commission on the water supply of the metropolis." That embraced both bills; but, as he had the report in his hand, he might mention that at page 7, with reference to the particular works of the other bill at Old Ford, Captain Tyler reports that "it is desirable that these works should be carried out with as little delay as possible." With regard to the opposition, it had so dwindled that he thought he might almost leave to clauses the questions which remain. He believed that the conservators, as Mr. Wyatt had told them, make a show of opposition to the preamble. The company's object was to get such an arrangement as would provide them with money for carrying on works in the Thames. Of course, had an arrangement been come to, they would have been ready to insert clauses to carry out that arrangement; but no such arrangement had been concluded, and they had been informed by the solicitor that some of the communications (and it was hard to separate them from the others) were to be considered without prejudice. Under these circumstances he abstained from referring to them at all. They had given notice to Mr. Wyatt to this effect, and that they would make application to the committee to make such an arrangement as they thought fit. They proceeded by tendering clauses similar to those in the Thames Conservancy Bill of 1866, and which, applied upon the same principle to the East London Company, would make their contribution for 10 million gallons £700 a year, being in the same proportion as the contributions of the other companies, the total being £7000 for 100 million gallons. He was lumping together all the payments which were now made by all the five companies. They proposed to take 10 million gallons, and had nothing else to guide them as to the fairness of such an arrangement except that which had been already made, and accordingly their clauses, as they stood, proposed that they should take 10 million gallons, and should pay £700 a year for it. With regard to the Metropolitan Board of Works, they had been in their usual difficulty as to getting any reply from them, but now he was happy to hear that the only point on which any considerable objection was raised was to their using a portion of Finsbury Park, for the purpose of making a covered reservoir there. Finsbury Park, or rather the space intended to become Finsbury Park, happened to comprise in it a point which was about the most convenient for a supply by gravitation, and it was, therefore, of importance to them to secure a site there for their covered reservoir, for that portion of the water which was not to be sent into their existing reservoir in the neighbourhood of the Lea, but which was to be distributed directly from their mains after it was filtered. It was reported upon by the engineer to the Metropolitan Board of Works, who stated that though "there was a special clause in the bill for protecting the sewers of the board, and the vestries and district boards, but inasmuch as it was proposed to take about five acres out of the proposed Finsbury Park, the undertaking should be opposed by the board." So long ago as the 9th of February of this year a letter was addressed to the clerk of the Metropolitan Board of Works, intimating that it was intended to apply to Parliament for authority to take a limited supply of water from the Thames at Sunbury; that the company and their officers would be at all times ready to give any explanation which the board might require, and that the engineer of the company has, for this purpose, prepared the plan and sections which accompany that letter, which would probably give a sufficient illustration of what was desired by the company, but that the company would be ready to modify their mode of operation in any way, consistent with the general object of their works, which might be suggested by the board; and they invited from the board an early communication of such terms and conditions, and of any modification of the proposed works which the board might deem desirable." That letter was dated the 9th of February, 1867, and accompanied by a plan, but no reply was returned, and he believed that frequent calls had been made, in order to get an answer, but without success. They had hoped to be able to settle those points without troubling the committee, but they had no choice under the circumstances, except to present the bill before them with all its imperfections (if imperfections there were) in the view of the Metropolitan Board of Works, and to listen to what they had to say.

Charles Greaves, Esq., examined by Mr. CLERK.

I have for many years past had under my consideration the further supply of water to our district. I have ascertained that the daily average during the dry months of the year is very much greater than during the other months of the year, and then everything has to be done to meet the *maxima* and the *minima*. But averages, though very useful, are not certain guides in these matters. The average of the three drier months exceeds the average of the rest of the year by about 10 per cent. Even supposing that we had the full power of the reservoirs contemplated in the other bill, we still should be short to the extent shown by the figures, in the paper prepared by me, in a few years time of the demand, if the district goes on increasing as it has done to the present time. It is assumed that the district will continue to increase as it has done lately, and therefore the deficiency will be as appears in the statement. I cannot, however, exactly answer as to the increase there being the greatest, because I have not studied precisely the comparative increase of the different populations, but the increase on the average of the metropolis is stated in the replies given to the committee by the various companies. The increase in the East London district considerably exceeds 1·73 per cent. I have considered very fully all the sources from which we could get water in aid of the river Lea. I have had my attention continually directed to it for the last 10 years. I have tried chalk wells, and got less than half a million gallons from one chalk well. I consulted Mr. Morris, the engineer of the Kent Water-Works Company, who I thought would have been as much in favour of wells as any engineer living, and a man of thorough experience in the matter; and although he gave his opinion that wells would supply us with water, his opinion was not so strong or so decided as to make it a desirable expenditure to encounter with such a problematical result. Mr. Bateman gave us the same advice, that we could not calculate upon chalk wells giving us a large supply of water. I have considered the taking of water from the Ouse, but that would entail a very expensive piece of engineering. The nearest point in London from the Ouse is 48 miles. I examined the Ouse during the same drought as we suffered from in these parts, and I was rather struck with the smallness of the river.

Mr. HENRY BAILLIE: As regards the river Ouse, what was the objection to the water there?

Witness: The chemist whom we consulted did not give us a first-rate qualification of the water, and the distance and the expense altogether went against it. There was some uncertainty as to the volume, and it was in rather an inferior position in point of quality, if we assumed a good position in point of quantity, and found that we were obliged to go below Bedford to get to a point where we might be sure of the quantity being safe.

The CHAIRMAN: Then you would have to bring it over the watershed, between that valley and the valley of the Thames?

Witness: Over the Chiltern Hills, which lie between the northern part of Hertfordshire and the valley of the Ouse.

By Mr. BAILLIE: The distance is 48 miles from above St. Neots to the point where we could distribute in London. The distance from the Thames is about 21 miles. I proposed a tunnel of several miles, which would have reduced the lift, I think, 70 feet; but then I was obliged to lift it 350 feet, notwithstanding the tunnel. The chalk hills are excessively high. Mr. Bateman concurred with me in abandoning that idea.

By Mr. CLERK: I have considered the question of getting a larger amount of storeage on the river Lea itself.

Mr. CLERK: Do you know what the cost of Mr. Rendell's scheme is?

The CHAIRMAN said it was given in the report as being £530,000.

Witness: I was in attendance on the committee of 1852, for the company, at the time when these plans were brought forward, and the estimates were investigated, and the idea was, as far as I can recollect, that they were estimated excessively low.

By Mr. CLERK: The object of the reservoirs, such as were proposed by Mr. Rendell, was to impound all the flood water which could be laid hold of. The reservoirs were proposed to be constructed in the valleys on the rivers as they flowed, and not on one side of them, so as to block the river in bodily; therefore, of course, so long as the water was being impounded into the reservoirs, the river would have been stopped altogether below. Looking to the flow of the water in the Lea, if we were to store a sufficient

quantity to give us a certain supply, the effect would be that in the lower part the flow of the river would cease. There would be no river except from the local springs or from the local rainfall. Concurrently with us, the New River Company have the power of making reservoirs. They have the power of taking the water for storeage—that is the expression in the Act—so that this storeage power may be divided between us and the New River Company. Mr. Bateman, whom I consulted upon that matter, concurred in the propriety of extending already commenced systems of reservoirs to the limits that the ground immediately surrounding them would admit of their being extended to, and then supplementing the supply of the Lea by a draught from the Thames. His advice was that we should go for, at least, 10 million gallons, and our bill is for the purpose of enabling us to take a quantity not exceeding that from the Thames. Considering the distance which we should have to construct our mains to get to the Thames, unless we were empowered to take such a quantity as 10 million gallons, it would be hardly worth our while to construct such a line of mains. The expense would be considerable, exceeding a quarter of a million, and the expense, as it were, diminishes as the quantity increases. No objection has been raised to the point of abstraction at Sunbury on the part of the conservators. There was no topographical objection on the part of any one. We have selected that point because the roads leading to Sunbury are not occupied with the mains of other companies, as the other roads are. The roads at Hampton, Isleworth, and Twickenham are full of pipes. There is one place where there is no room to get another pipe in; but the road from Sunbury, through Hounslow, is a fine open road, and presents no difficulty or obstruction. The proposition is to erect a certain amount of engine power and engine-houses not far from the bank of the river, at the upper end of the town of Sunbury, rather beyond all the population and the houses; to lift the water from there to a site chosen about two miles on the way to London; at that point it is proposed to filter the water, and to carry out all those arrangements, preparatory to sending it forward to London, which would be necessary in what may be called a complete water-works. The water, which is filtered in the neighbourhood of Sunbury, would be taken in that state to Walthamstow, where it would go into the reservoir and mingle with the other supply, and would receive a second filtration as it passed into the second system of distribution. That is, so much of the water as was not taken directly from the proposed reservoir at Hornsey Wood Hill. In addition to that mode of supplying water, we propose also to raise the filtered water from the neighbourhood of Sunbury to a reservoir, from which we can deliver it by gravitation. I propose to construct a reservoir of moderate dimensions on the most convenient and accessible unoccupied high ground which there is on the road to use—that is, a service reservoir connected with the existing district, and so the water would be already filtered, covered, and in the condition required by the General Act, to distribute to into the company's district from there. The pumping at Sunbury will pump the water up to the height of the reservoir in Hornsey Wood Hill. It must go to that height to get over the summit level at Walthamstow. The actual summit on the section is a trifle higher than the reservoir. It is at the Brecknock Arms, in the Camden Road. The level of the water in the reservoir is about 14 feet lower than the summit. There are certain fields there, where it has been proposed to construct hereafter a park. Powers were obtained, I believe, by the Metropolitan Board of Works, a good many years ago—in 1857—for the purpose of making a park for Finsbury, but the land is still in the condition of open fields. We should require, under our scheme, to occupy there in any part of the park, for the purpose of our reservoir, about three acres of land; that is after the operations of construction were completed. The reservoir itself would a little exceed two acres. For the purpose of construction, to be able to fence it round and to appropriate, we should require, as it were, a certain quantity of ground, including a strip over the pipes going in and out; but it is not necessary that that should be absolutely separated from the domain of the park. It might be merely marked out by posts, or anything that is necessary. A plan was proposed early in the year to indicate to the metropolitan board the way in which the ground would be occupied. Our reservoir would be entirely below the surface of the ground. As the section shows, there is a small portion elevated, which would form, as it were, a terrace in the ground, but which, if it were necessary to hide it, might be so obliterated by raising the bank below, that nobody would know it was there. The ground might be levelled; but the fashion of the present day is rather to undulate the ground in the parks, and give it a varied character. There would be a good deal of material, of course, excavated from the ground in the construction of the reservoir, but it need not be removed from the estate, if those who had the management of laying out the park preferred to retain it there. It might, I should think, be made into little hills and dales, but I do not profess to be a landscape gardener.

In reply to the CHAIRMAN, as to whether clauses had been proposed by the promoters of the bill to the Metropolitan Board of Works,

Mr. CLERK said that the promoters had been waiting for an answer from the Metropolitan Board of Works, and had not yet received one.

Witness: We are ready to meet the views of the Metropolitan Board of Works, so long as they do not interfere with the purposes for which the reservoir is to be made. There will be, of course, a line of mains entering this reservoir, and another one carried along the Seven Sisters Road down to our point of distribution. There must be an inlet and an outlet, and these mains would be buried in the ground, and hidden from sight. I propose that our pumping-station at Sunbury should be of an ornamental character, and to make no smoke. The mains along the high road will be carried along in the ordinary way, and to the satisfaction of those who have the jurisdiction over the roads. Those mains which will be carried away from this reservoir will be, of course, below the surface of the ground, and carried along the roads in the usual way. The water in that reservoir will command a higher level than any water which I am pumping at present for general distribution. The gravitation power will be sufficient to command the whole district. We are prepared, of course, to insert clauses for the ordinary protection of sewers, and so forth. They are already in the bill. The total amount of the estimate for the station on the river-side at Sunbury is £12,000. The station, land, filtering-beds, and sluices in the neighbourhood of Sunbury amount to £31,000. The engine-houses and engines for pumping the water from the filtering-bed, either to the Hornsey reservoir or to Walthamstow, I have put down at £33,000, and the main-pipes £147,000. The cost of the Hornsey Wood reservoir itself will be £24,000, making a total of £246,000, which at 5 per cent. amounts to within a few pounds of the amount put down as to be raised for the purpose—namely, £260,000. Our capital at the present time is £1,400,000. We have no mortgage debt at all.

The CHAIRMAN: Why are your reservoirs separate from the first pumping-station, so as to make two pumping-stations necessary?

Witness: I did not see a convenient place for the erection of filter-beds close to the banks of the Thames, and it appeared that land would be more expensive there; and altogether I thought it advisable to sever the main pumping-station and filter-beds from the waters immediately on the border of the Thames. The Thames floods heavily in the meadows at Sunbury, and I thought it better to remove the filter-beds a short distance. At two miles from the river side there is a railway station and access, and the soil—gravel and sand—appears to contain that which is wanted for the construction.

Cross-examined by Mr. CRIPPS: I have no information at all of the plans which the Board of Works have adopted for the laying out of Finsbury Park. When I pitched upon the place for a reservoir, I had not the most remote idea that the Metropolitan Board had bought it, or that Finsbury Park was to be there. I found some deserted fields in a most extraordinary state, and I went on with the notices. We shall require about three acres for the construction of the reservoirs. The contractor's works might exceed that a little bit, but I do not know why they should. I do not take into account the road by which the carts would be drawn in and out. I have estimated for the ground to be removed to the nearest tip, without any reference at all to what is going to be done with that ground. I should be very happy to sell it to the Metropolitan Board if they want it. There would be a certain amount of difficulty in removing it—that is to say, it would cost less money to leave it there than to take it away. The difficulty would be one of expense. There are frequently places requiring ground, in the way of filling, and sometimes it is a surplus altogether. Every bit of it could be made into bricks if any ground could be found to make them on. I do not propose to take powers for brick-making in the park. There would be no objection, I suppose, to so constructing our reservoir as to cause no interference with the proposed villas, otherwise it would be impossible to put them there. There will be no difficulty in avoiding that part. Indeed, if I had known that those villas were going to be where they are, I might have altered the sites of the reservoirs a trifle. There would be no objection to putting the pipes along the road so as to avoid going under the house. We are quite willing to take an easement. There is no difficulty in leaving it level and ornamental, with the exception of a small amount of excrescence which appears on the lower side, in the cross section; those are the amenities of the plan. Our bill takes the power of an extension over five years to construct our works; but there would be no difficulty in limiting this particular part where the park is to a much shorter period. We could do it in two years from the passing of the Act, if it were any accommodation to the public in allowing the park to be opened sooner.

Re-examined by Mr. CLERK: I was quite ignorant of the fact that the land had been appropriated by Parliament for a public park. If I had known it, I do not know that any land there is more vacant. Every place that is accessible is being built upon very rapidly, and there are no other sites with proper elevation to be had. I should like to have two years to complete the works. Deep excavations in clay require a certain amount of care. I might agree to have them all finished by Christmas, 1869, if I get possession of the land. The highest point of our line of communications is the Brecknock Arms, where the Seven Sisters Road crosses the York Road. That is the actual summit, but that is all built over, and is further away from our district, and is not so convenient as Hornsey Wood Hill. There is no open space for a reservoir, and it is a most fortunate thing that there is that ground. Placing our reservoirs there would greatly facilitate our other reservoirs and our means of supplying London. Nothing has been done in respect of the park: not a sod has been turned; it is all open fields.

Mr. CRIPPS stated that the Metropolitan Board of Works did not desire to prevent this work being carried out, but only to have it carried out in a particular way.

Joseph William Bazalgette, Esq., examined by Mr. CRIPPS.

I am engineer to the Board of Works, and in connexion with them had under consideration the laying out of the land for Finsbury Park, the site for which has been purchased by them. This plan, which has been laid out for many months, has been prepared as the most expedient for the purpose of carrying it out, and was finally approved of by the board. The order has been given for the commencement of the works, and in about ten months from the present time they will all be completed. I think that the reservoir in its present position would be very objectionable; it would interfere very much with the ornamental character of the park. My idea is that it should be done under the direction of the Board of Works, so that there might be time to consider what was the most convenient way of doing it. I think that it would be very much better if the reservoir had been placed on the other side, out of the park altogether, but I think that under proper restrictions it might be made very conveniently for the public. The ground opposite is open partly; there are more than three acres not built upon, and I think there can be no very great difference of elevation. They could make up with embankments in so short a distance. I could state further that I consider that if the reservoir is to be formed in the park, the time within which it is to be formed is a very important object. To the best of my judgment that reservoir can be constructed and the whole thing cleared away before the spring of 1869, supposing the Act to pass in the autumn of 1867. With reference to the replacing of the surface, I think the Board of Works should have control over that. I think that to make a mound standing out in the form of a reservoir above the ground, as shown in the plan, would be exceedingly ugly, and would be detrimental to the property. We are about to lay out a large sum of money to make that park, and I think it would be quite wrong. The plan has been designed without knowing the arrangements for the park, and therefore has not been made to accord with anything; a little modification may make it accord with the general laying out of the ground.

Cross-examined by Mr. CLERK: When your plan was sent to me on the 9th of February I did not show my plan to Mr. Greaves. It was in existence then. Mr. Greaves knows perfectly well that if he had called upon me and asked me for information, he would have had any information I could give him.

The CHAIRMAN inquired whether there was not a provision to enable the Metropolitan Board of Works to let part of the land on building leases, so as to reimburse them for the outlay.

Mr. CLERK read a clause from the Finsbury Park Act.

Witness: The extent of land we propose to build upon is shown upon the plan. I should say it was more than 20 acres. I cannot tell you whether this is proposed to be let on building leases. I have no doubt the board are acting under very good advice upon that point. My impression is that money has been raised some time since under the Act, for the purpose of making this park. Mr. Greaves tells me that the height of the reservoir would be between 3 and 4 feet; an abrupt rise like that in an ornamental park is very objectionable. It is well known that for some considerable period before you deposited your plans we had taken that ground for Finsbury Park. Within one month from the time that the sanction of the board is given to it, your company shall have possession of the land. I think that one month would be amply sufficient to settle the plans, and do

everything; and then if they had 15 months from the time allowed by the board to construct the reservoir, that would be quite sufficient. I think that the company should be required to remove the soil out of the park, unless they have the sanction of the Board of Works. It may so happen that they may arrange to place some of the soil so as to add to the ornamental character of the park, or so as not to detract from it. I should provide that it might be left in the park in such a form as the Metropolitan Board of Works might direct.

The CHAIRMAN stated that the company must be considered to have been aware that this land had been dedicated by Parliament to the purpose of a public park, and that whatever works were constructed there must be constructed to the satisfaction, and under the direction of the authority under whose control Parliament had placed the laying out of the park.

Mr. CLERK stated that the promoters of the bill were perfectly willing to accept this condition, provided a reasonable limit of time was adopted.

The CHAIRMAN said that a period of time should be given after the final decision as to the works being constructed, and that the necessity of enclosing the works with paling or railing, if it were required, would, of course, be involved.

Upon Mr. CLERK suggesting that in case of difficulty it might be necessary to have some reference, the CHAIRMAN stated that Parliament had placed this park under the control of a recognized authority, and that no such thing as a reference was necessary.

EIGHTH DAY—WEDNESDAY, MAY 29.

EAST LONDON WATER-WORKS (THAMES SUPPLY) BILL.

The CHAIRMAN inquired of Mr. Denison what course he intended to pursue.

Mr. DENISON said he had been instructed since the day previously, on behalf of the Thames Conservators, about whom there had been a discussion with Mr. Wyatt. It had been said that the committee could not recognize them as opposing the preamble of the bill, and of course he was not there to re-open that question. The committee had said also, quite consistently with that, "We should not pay any attention to an opposition which was not really against the preamble of the bill, but was only for the purpose of obtaining some clauses." He had now been instructed on the clause question, and was about to argue that question.

The CHAIRMAN said perhaps he had better wait until the committee had heard the learned counsel on the preamble of the Thames Supply Bill close the matter, and then they would be prepared to hear him follow on the clauses as once.

Mr. CRIPPS said the question upon the preamble related as much, or perhaps more, to the preamble on the Various Powers Bill as to the Thames Supply Bill. He had read Captain Tyler's report, and he must say of that report generally that it showed very great painstaking and very great impartiality, particularly as Captain Tyler seemed to have had to exercise to some extent a judicial function, the East London Company being before him by counsel, and the memorialists being also represented there; but he did not imagine that he would be required now to comment upon it in any way, because there was a considerable portion of that report—and probably the most important part—which would come in and be of importance in the general inquiry, and which had not any application to the special legislation involved in the East London (Various Powers) Bill, or the Thames Supply Bill. Captain Tyler, in the larger part of this report, had had his attention directed to what he called three subjects, which might be three in one point of view, though in another point of view there might be only one—viz., deficiency in the quantity of water, Sunday supply, and the constant supply. But assuming that the constant supply was to be adopted, that seemed to include the other questions also. If the supply was to be intermittent, then the Sunday question and the deficiency of quantity might be important. He would direct the attention of the committee to the few words in which Captain Tyler summarized what could be said upon that matter. He said—"It would be to the direct interest of the company to erect and maintain good fittings, so as to avoid waste. And constant service, with convenient arrangements and a minimum of waste, would be to the advantage of all parties. Second only to improved dwellings, a legislative enactment carrying out such provisions would be the greatest blessing that could be bestowed upon the working classes and the poor of London. Obviously that was a question which was included in the general question. That brought him back to the question how much of the report bore upon those issues which, on behalf of the Board of Works, he raised before the committee on the general question, and how far this report, if he had had it in his hands at the time, would have affected anything which he should have said or proposed to lay before them on behalf of that body. With a view of showing how much of this was applicable, he would recapitulate what he apprehended were the issues which he endeavoured to put before the committee in this case. He submitted to them that this being confessedly an imperfect scheme, it deserved no favour at their hands, and ought to be rejected unless they could see their way to imposing conditions upon the parties, so as to remedy defects which were admitted; and generally he apprehended that, with regard to all questions involved in these two bills, they would only grant the powers which were asked, subject to any resolutions to which they might hereafter come upon the general question, and they could not grant privileges to them which would take them out of legislation which was imminent, and which they might be recommending on the general question. However, specifically the matters which he objected to were these: That the proposal, whatever its details might have been, by which the Various Powers Bill was substantiated, was really the obtaining an increased supply by the water company for the east of London from a confessedly highly impure and polluted stream, that it was unnecessary to give the committee evidence upon the matter, because it was clear, upon the report of the river Lea Commission, which they took as a part of the evidence—and, indeed, upon the admissions of Mr. Greaves, their own engineer, who was called to support the bill: and that Dr. Letheby himself, who was called as their witness with reference to the purity of the water, told them that, notwithstanding all that he had done in the laboratory, he still was of opinion that it was highly inexpedient to take water from a stream polluted with sewage. With reference to other matters stated by Dr. Letheby, he did not presume to say that either his evidence, or any other evidence, was at all conclusive as to how far the cholera in the east of London had been caused or aggravated by the impurity of the water. There was a great deal of evidence cited on both sides, but what he thought was important in Dr. Letheby's evidence was, that he admitted that cholera might be caused or aggravated by the drinking of impure water; and, inasmuch as this was admitted as one of the possible causes, it was as clearly one of the duties of the committee to endeavour to remove it, if it could be removed by legislation at all, as if they had been able in a more advanced state of science to predicate that it was the sole or a principal cause of cholera. Dr. Letheby mentioned other causes, which were matters which could not be touched by legislation, but there was one cause that was within their province to which their attention was directed; and he further said that the company could not expect favour at the hands of the committee, because by the admission of the company's own engineer, and by the way in which they had proposed this bill to them in the first instance, they were willing to introduce a system of intercepting sewers, with a view to aid in the purification of the water, if not entirely to purify it, and though they had proposed that as a price which they were willing to give for the privileges which they asked from Parliament, in consequence of the objection of the Metropolitan Board of Works, not to the drains themselves, but more to the efficiency of them, they had withdrawn those works altogether, and had substituted nothing in their place. Consequently they were coming to the committee with a scheme confessedly imperfect, and confessedly one which in the inception of the matter, in the opinion of their engineer and other advisers, they could not expect them to grant in its simple state. He apprehended that it was entirely the duty of the promoters to come with a scheme which should be complete. Those being generally the issues which he had raised, he would now direct their attention to how far Captain Tyler's report bore upon the matter. He had taken out all the report from page 20 to the end, which had no application to the special matters, and he found that what he had to inquire into were the following allegations by the memorialists, who were before him:—"1. That the company's works at Lea Bridge, from whence the whole water supply of this portion of London is derived, were situated at a point where the water has been contaminated by the sewage of Broxbourne, Hoddesdon, Bishop's Stortford, Enfield, Ware, and many other places, comprising a population of many thousand inhabitants." It seemed to have been a direct issue raised before him whether the water was contaminated at that source by these means. "2. That at the works of the water company (at Old Ford) there was an underground reservoir several feet below the river Lea, which was immediately contiguous to it, and that the water from the river, which was no better than an open sewer, found its way into this reservoir. 3. That at the same works there were two open ponds, where no sufficient care was taken to protect the water against impurity, and that water had been admitted from these ponds into the underground reservoir. 4. That water so used had been the principal, if not the sole, cause of the fearful mortality from cholera at the East of London." Now, looking to these as the four subjects of inquiry, they were not of equal importance to the immediate issue before them, because he believed it was a part of this bill entirely to abandon those works at Old Ford; and therefore, so far as Captain Tyler had inquired into what had taken place there, that inquiry would be of importance with reference to the past rather than to the future, it being proposed, under any circumstances, to do away with the cause of complaint by this bill; and in the same way No. 3 seemed to him to be one of less importance: "That at the same works there were two open ponds, where no sufficient care was taken to protect the water against impurity," because there, again, it was proposed that this should be done away with. Now, there remained the allegation, which bore most importantly upon the subject at issue, whether or not the water was polluted, and was taken from a polluted steam. [The learned counsel read lengthened extracts from the report of Captain Tyler.]

The CHAIRMAN said that there was not much use in pursuing this. The question of the specific impurity of the river at certain times depended upon positive evidence, and beyond that they really could not go into the speculations of gentlemen which were not based upon facts. It would be much better to rest the case upon the certain impurity of the river at certain periods and its possible impurity at others.

Mr. CRIPPS said Captain Tyler reported that it was most important in the interests of the district that the company should obtain both this supplement to their supply and this extra means of storeage; they were urgently required as temporary remedies, whatever decision might be arrived at in regard to the more comprehensive schemes now before the Royal Commission on the water supply of the metropolis. He (Mr. Cripps) asked the committee that, if they were granted, they should only be granted as temporary remedies, and not granted so as to prevent permanent remedies being adopted. It might be that they might grant what might be an immense remedy for the time with considerable injury for the future, and therefore he asked them either to reject this bill altogether, or to take care to pass it with such conditions as it might be reasonable and proper to impose upon the company, and such as they, in the first instance, thought necessary.

Mr. CLERK said it devolved upon him to make a few observations in reply to his learned friend, Mr. Cripps, upon this report and his opposition to their two bills. Now, the great issue before the committee was this: Was the district in the east of London now under the supply of the East London Water-Works Company in such a state that they could not, as a Legislature, help seeing that, even at the present time, and certainly almost immediately, a very increased additional quantity of water must be given to that district by the East London Water Company, in order to preserve the health and comfort of the people there? With that view they had introduced the two bills. Now, they might recollect what was stated yesterday by Mr. Greaves, and which they had in evidence the other day from Mr. Bateman, as to the state of the river Lea in the year 1864—that in the year 1864 so great was the demand upon the company's resources that they were actually obliged to limit the average supply in that district during those months when there was the greatest demand for water; and looking at the continuous increase in that district, increasing as it did in a far more rapid ratio than any other part of the metropolis, with an increase in their demand for water amounting to nearly 500 million gallons daily, year by year, it was clear that it was absolutely necessary forthwith to adopt measures for the purpose of giving an increased supply to the district under their control. One of these questions had been gone into by Capt. Tyler—viz., that question of providing additional reservoir space in the neighbourhood of Walthamstow, for the purpose of supplying this district. Now, there was no objection on the part of any one to that scheme, except on the part of the Metropolitan Board of Works; and their objection, as he understood, was this, that the river Lea was an impure source of supply, and that no additional water ought to be taken from the river Lea to supply this district, unless there had been in the first instance constructed some very extensive works, for the purpose of intercepting the sewage which fell into the river. The opposition which was raised at the last moment by the Metropolitan Board of Works upon this subject seemed to him to be somewhat an ungracious one, because they were perfectly aware that when the East London Company's scheme was brought before Parliament they were not the only parties who were objecting to the making of any intercepting drains by the company, but that divers parishes, Enfield, Tottenham, and others who would have been affected by the construction of those additional works, were here as petitioners against those works before the committee, because

the only mode in which the water company could have carried on works for the purpose of intercepting that drainage was by continuing their drains higher up the river, and so bringing up a greater quantity of sewage into the existing intercepting drain, which passed down below their works at Enfield, and so was carried on to their point of supply. In consequence of the opposition of all those parties, and in consequence of the opposition of the Metropolitan Board of Works to their scheme of intercepting drains, they struck out that, because they themselves say that the works which the company proposed are not sufficient for the purpose; but they found them here still, opposing their scheme, and contending that the waters of the Lea are so impure that no additional quantity of water should be stored for the purpose of supplying the district until these intercepting works were done. Now, whatever might have been the complaints or the fears with regard to the distribution of water from the Old Ford Works, no complaint or no fear had ever been expressed with regard to the general supply of water from the Lea; because, as they had heard from Dr. Letheby, who had for years past carried out an analysis, not only of the waters of the Lea, but of all the other water companies supplying London, the supply by the East London Company was not in any sense inferior to that supplied by all the other companies, and it was only in consequence of apprehensions being entertained with regard to the state of the Old Ford supply that any question was ever raised with regard to the state of the purity of the waters of the Lea. When the matter was brought under the consideration of the Metropolitan Board of Works, Mr. Bazalgette, who was their engineer, reported to them:—"That the works proposed by the East London Water Company are not such as would purify the water of the Lea within the metropolis, and to be effective should be of a more comprehensive character." It was only in general terms like that Mr. Bazalgette reported to the Metropolitan Board of Works, but he was also consulted on behalf of Enfield and Tottenham, in which he reported as to what would be necessary to be done in order to secure the purity of the river Lea. He said—"At an early stage of my inquiry I became impressed with the impossibility of effectually and economically draining and disposing of the sewage of any of the following populous and detached towns or districts situate on the north or east of London, except by embracing the whole under one comprehensive system." And then he enumerated about twenty towns, all of which ought to be included in the one comprehensive system of drainage, beginning at Hertford, and including Ware, Broxbourne, Hoddesdon, Cheshunt, West Ham, East Ham, Little Ilford, and a number of other places. He stated that—"The river Lea forms the natural outfall for the drainage of all those places, and nothing short of an entire removal of their sewage by a combined and comprehensive system of sewers will purify its waters and render this district a well-drained suburb of London. Ineffectual efforts have been made to dispose of the sewage." Then he mentioned Stratford as a striking illustration of the bad policy of any separate town, so placed, attempting to carry on its own independent system of sewage. Then he went on to say—"I recommend that the above-named places be combined by an Act of Parliament, and be formed into one drainage area, the limits of which are indicated generally by the coloured portions on the accompanying map." Now if the opposition of the Metropolitan Board of Works on this subject meant anything, it meant this:—That the East London Water Company themselves must introduce a bill for the purpose of taking hold of the drainage of the whole of this district by one combined system, doing the whole of this work themselves, before they were to have any authority to take any quantity of additional water from the Lea. Why should such an obligation, in the first place, be put upon any individual water company? That was not the policy of Parliament with regard to the companies that took their supply from the Thames, when they were sent in 1852, by the action of the Legislature, to take their water from above Teddington Lock. It was not made a condition incident to their taking this water that the sewage of all the towns discharging into the river Thames should be removed in the first instance. And, again, when public attention was more closely drawn to the necessity of removing the sewage of towns from the river Thames, which supplies one-half of the metropolis with water, the obligation of doing so was not thrown upon the water companies.

The room was then cleared. After some time the counsel and parties were again called in, when

The CHAIRMAN said that the committee were of opinion that the preamble of the bill was proved, and that they had come to the following resolution:—"That the committee, in passing the preamble of the bill, reserved the consideration of any amendment which they may deem it expedient to recommend in the Water Supply Act of 1852."

The clauses of the bill were then proceeded with.

On clause 20, Mr. DENISON was heard on behalf the conservators of the Thames against the exception contained in the proviso at the end with regard to floods.

The CHAIRMAN suggested that a clause should be prepared enacting that the companies should fix a gauge at their own expense, upon which the conservators should mark what they considered to be flood water, beyond which mark the company might take the water for nothing. The clause was postponed.

A series of manuscript clauses, proposed by Mr. Denison on behalf of the promoters, were accepted by the promoters.

On clause 31, Mr. COOPER proposed that the 1s. 6d. should be altered to 1s. 9d.

Mr. T. MARTIN, on behalf of the parish of Kensington, stated that his clients thought 1s. 9d. was the minimum.

The CHAIRMAN desired that evidence might be called upon this point.

Mr. *W. Booth Scott*, examined by Mr. COOPER, said he was chief surveyor for the parish of St. Pancras. There were about 80 miles of road in that parish under his control, about 20 of which are paved with granite, and 40 metalled with granite.

Mr. COOPER asked if it was in his experience with the Imperial Gas and other companies passing the parish, where a deep cutting was made, it was possible to complete it at one gravelling.

Mr. SCOTT said that it was possible, but it was never done so, because the companies never had the trenches properly filled in. In practice he thought it would not be possible to restore a road to its proper state after it was made under 1s. 9d. a yard. His decided opinion was that it ought to be up to 2s., if it cost as much. It was done for the Imperial Company by the parish, who charged 1s. 6d., and afterwards, on a subsequent settlement, another 1s. 6d. They had a second voucher.

In cross-examination by Mr. CLERK, *Witness* said that he was talking of metalling with granite when he alluded to the Imperial Company. They paid the parish 1s. 6d. a yard for flint roads and granite. The one cost more than the 1s. 6d., and the other less, to reinstate. The parish took 1s. 6d. for the whole, and that was all the company paid. The New River Company and the West Middlesex paid the same—1s. 6d. for granite roads.

The CHAIRMAN: I do not understand what you said about doing it twice over.

Witness: That is in paved roadways. For the granite roads and the flint roads we charge 1s. 6d.; but the flint roads cost less to reinstate than the granite roads.

Re-examined by Mr. COOPER, *Witness* said there was an after pavement from the Imperial Gas Company in the paved roadways. The roads which would be disturbed by the East London Company were all granite roads, macadamized with granite. They did not pass through any of the flint roads. He invariably observed a subsidence in the paving of roads after they had been passed through by a gas or water company. If the trench was filled in carelessly, and not properly rammed, it settled, and the parish had to add to the surface. They had no control over the manner in which gas or water companies filled in their trenches.

Mr. *James Broadbridge*, examined by Mr. T. MARTIN, said he was surveyor for the parish of Kensington. The roads there were under his charge. Had had large experience of the cost occasioned by the breaking up of those roads by gas or water companies for the last 16 years. Was of opinion that 2s. would be the average cost of breaking up such roads as would be broken up under this bill. The sums which the parish had received from the companies—1s. 6d., 1s. 8d., or 1s. 9d.—he had found to be sufficient to reinstate the roads in their original state. Mains are proposed to be carried from Kensington Palace Gardens to Shepherd's Bush. The Uxbridge Road was a most important road, being on a hill rise and a very steep gradient, and his opinion was that the traffic and the expense on that particular hill would be greater than if it were on a flat. He thought that a maximum sum of 2s. ought to cover the expense of breaking up the roads. The Kensington vestry would be satisfied with 1s. 9d., with a certain control over the filling in of the trench.

By Mr. CLERK: Did not know whether he had any control under the General Act over the filling in by a gas or water company of the trench.

By the CHAIRMAN: Had not exercised any legal power—only moral power. When he had found that the works were going on wrong, he had written to the companies, and they had been put right.

By Mr. CLERK: The mains of this company would run about one mile through Kensington parish. The West Middlesex Company are at present laying down a main in the parish.

Mr. CLERK: Within three days after that main was laid down was not the road used again, as if there had been no main laid there at all?

Witness: Hardly. It was a trench three or four feet wide; and of course it was patent to everybody going along that there had been an excavation all the way along. The parish had no control over the company, but having transacted business with them for so many years, he had only to write and request certain things to be done, and they were done.

By the CHAIRMAN: The trench had only just settled down—indeed they were on it now—but he had noticed for years that it was perhaps four years before the road would resume its original state where a trench had been. Thought the West Middlesex Company paid 1s. 8d, which was for granite roads.

Mr. *Charles Greaves* was recalled, and in answer to the CHAIRMAN said the actual cost of the paving of the different roads was 1s. for repairs of gravel roads, 1s. 6d. for repairs of granite and macadamized roads, and 1s. 9d. for repairs of pitch paving.

Mr. CLERK called attention to the Pneumatic Despatch Company's Act, and Mr. *W. B. Scott* was recalled and examined by Mr. COOPER. He said the cost of repairing those roads was 1s. 6d. per superficial yard, three inches thick. That was a paved roadway, 1s. 8d. would be the actual cost of a square yard of broken granite.

Mr. *Broadbridge*, on being further examined, said that after the trench became consolidated it was found necessary to recoat it once or twice, or more, within the four years afterwards, and it would cost 1s. 8d. per superficial yard for reinstating that trench. The roads would be coated with granite just a stone thick, about 2½ or 3 inches. The Uxbridge road is consolidated now; it is 6 or 8 inches, and in some parts 3 or 4 inches thick.

In reply to the CHAIRMAN, Mr. Greaves said that the granite roads extended along the line of the mains more than 20 miles. The length of the works is 23 miles of road. The granite does not extend beyond Hounslow. From Hounslow inwards it would be granite; all Notting Hill would be granite. From Shepherd's Bush westward two-thirds would be granite and one gravel. Marylebone and Islington, which are granite parishes, were satisfied with the amount.

The CHAIRMAN said the committee would leave the clause as it was in the bill.

The other clauses were then proceeded with.

After clause 35, Mr. COOPER proposed a clause to extend to this Act the clause of Michael Angelo Taylor's Act.

Mr. CLERK said that the promoters would have no objection, provided the clause was made to apply only so far as it applied to any other companies in the metropolis.

Mr. COOPER assented, and the clause was inserted.

A clause as to the expense of the repairs was inserted.

Mr. COOPER proposed a clause giving power summarily to recover penalties and moneys, but did not press it. He also proposed a clause giving facility of reference to the president for the time being of the Institution of Civil Engineers, but this was rejected as being inconvenient. Mr. Cooper then proposed a clause to compel the East London Company to supply the parish of St. Pancras, in their passage through the parish, with water for flushing the sewers, and for other public purposes when required.

Mr. CLERK argued against this clause, that the notice required by the Standing Orders had not been given, and therefore the clause was not inserted.

Mr. COOPER then proposed a clause as to making up local rates in the parish of St. Pancras.

Mr. CLERK objected, and

The CHAIRMAN stated that the committee would alter the clause so as to make it similar to the clause inserted in the Railway Acts. As to Mr. Cripps's proposed alteration, in clauses as to Finsbury Park, the committee would accept them.

Mr. CLERK proposed an amendment (as to arbitration) to the clauses brought up by Mr. Cripps, which that gentleman objected to.

The CHAIRMAN stated that the committee must leave the promoters of the bill to their ultimate remedy, because it would have been a question between rejecting the bill altogether and admitting them into the park *sub modo*; and that the clause would stand. He inquired also if both parties were satisfied with clause 20.

Mr. CLERK read the clause proposed to meet the objections of the conservators of the Thames.

Mr. SARGENT objected to the clause.

The CHAIRMAN stated that if Mr. Sargent would not take the responsibility of acquiescing in the settlement of the clause, it had better be left to the other side.

Mr. SARGENT declining to express any further opinion upon the matter the clause was passed with amendments.

The other clauses of the bill were then severally passed, and the chairman was directed to report the bill, as amended, to the House.

(To be continued.)

METROPOLIS GAS AMENDMENT BILL.

A BILL (as amended in Committee, and as proposed to be amended by the Select Committee) to amend the Metropolis Gas Act, 1860, and to make further Provision for Regulating the Supply of Gas to the Metropolis; and for other purposes connected therewith.

WHEREAS it is expedient that such provisions as are in this Act expressed be made for amending the Metropolis Gas Act, 1860 (in this Act referred to as the Act of 1860), and for further regulating the supply of gas to the metropolis, and for other purposes connected therewith:

May it therefore please your Majesty,

That it may be enacted, and be it enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords spiritual and temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

PRELIMINARY.

Short Titles.

1. This Act may be cited as the Metropolis Gas Act, 1867, and this Act and the Act of 1860 may be cited together as the Metropolis Gas Acts, 1860 and 1867.

Interpretation and Construction.

2. In this Act—

The term "the City" means the City of London and the liberties thereof;

The term "the Commissioners of Sewers" means the Commissioners of Sewers of the City;

The term "local authority" includes the Commissioners of Sewers;

The terms "Companies" and "Company" mean the companies subject to the Act of 1860, and each of them;

The term "half year" means a half year reckoned from the first day of January and first day of July in each year;

The term "quarter" means a quarter of a year reckoned from the first day of January, first day of April, first day of July, and first day of October in each year;

The term "candles" means such candles as are described in section 25 of the Act of 1860;

The term "day" means (except in this section) twenty-four hours reckoned from nine o'clock in the forenoon of one day to nine o'clock in the forenoon of the next following day, so much of each day as is before nine o'clock in the forenoon being reckoned as part of the immediately preceding day of the month or week;

and this Act shall be read as one with the Act of 1860.

Application of Provisions respecting Metropolitan Board and Commissioners of Sewers.

3. Where under this Act anything is required or authorized to be done by or in relation to the Metropolitan Board of Works and the Commissioners of Sewers, or those bodies disjunctively, the same shall be deemed to be required or authorized to be done by or in relation to the Metropolitan Board of Works for all purposes connected with the supply of gas to the metropolis exclusive of the City, and by or in relation to the Commissioners of Sewers for all purposes connected with the supply of gas to the City.

Repeal as in Schedule.

4. Such parts of the Act of 1860 as are described in the schedule to this Act are hereby repealed, as from the thirtieth day of September, one thousand eight hundred and sixty-seven.

AMALGAMATION.

Scheme by Companies for Amalgamation.

5. The companies shall, as soon as may be after the passing of this Act, settle a scheme for the amalgamation of the companies or some of them, and shall submit the same to the Board of Trade, and such scheme shall be framed with a view to the reduction of the expenditure of the companies.

Examination of Scheme by Board of Trade.

6. The Board of Trade shall give notice in the *London Gazette*, and by advertisement in two daily morning newspapers published in London or Middlesex, of the submission of such scheme; and shall cause copies thereof to be delivered to the Metropolitan Board of Works and to the Commissioners of Sewers; and shall receive any representations made to them by such board or commissioners respecting the scheme, and shall consider the scheme and representations (if any), and may suggest any modifications of the scheme.

Confirmation of Scheme.

7. If the companies assent to the modifications (if any) suggested by the Board of Trade, and the scheme as so modified is confirmed by order of Her Majesty in council, the same shall have full effect, and shall be as binding as if it had been enacted by Parliament.

Provision for several Schemes.

8. Nothing in this Act shall prevent the submission to the Board of Trade of more schemes than one, either for the whole of the metropolis, or for any part or parts thereof, and either as alternatives or not, or prevent the confirmation of any one or more of the schemes submitted, with or without modifications, such modifications (if any) being assented to by the companies affected thereby.

Reference to Commissioners.

9. If no such scheme is submitted to the Board of Trade for approval within six months after the passing of this Act, or if the companies do not assent to any modifications suggested by the Board of Trade in any scheme so submitted, then the Board of Trade shall, as soon as may be after the expiration of the said period of six months, or after such failure to assent, appoint three competent and impartial persons to be commissioners, to frame and report a scheme or schemes for the purpose and on the principle aforesaid, or to consider and report whether the suggested modifications of the scheme or schemes submitted ought to be made or not.

Vacancy among Commissioners.

10. In case of a vacancy happening among those commissioners by death, resignation, or otherwise, the Board of Trade shall appoint a competent and impartial person to fill the vacancy.

Evidence, &c.

11. The commissioners may summon any person to give evidence or to bring and produce documents before them, and may administer oaths, and take affidavits and declarations.

Penalty for Disobedience, &c.

12. If any person wilfully fails to attend in obedience to a summons of the commissioners (the reasonable expenses of his attendance having been paid or tendered to him), or refuses to answer, or knowingly and wilful answers untruly, any lawful and relevant question put to him by or before the commissioners, or without lawful excuse (proof whereof shall lie on him) refuses to bring or produce before them any document which he is by any such summons required to bring or produce, every such person shall for every such offence be liable, on summary conviction before a justice, to a penalty not exceeding fifty pounds.

Penalty for False Evidence.

13. If any person on examination on oath or affirmation before the commissioners, or in any affidavit or declaration used before them, wilfully gives false evidence, he shall be deemed guilty of perjury.

Protection of Commissioners.

14. The commissioners shall have the like protection and privileges, in respect of any act done or omitted to be done, in execution or intended execution of their duties, as justices of the peace acting in execution of their office have by law.

Inquiry of Commissioners.

15. The commissioners shall take and receive evidence and information offered, and hear and inquire into suggestions made, respecting the amalgamation of the companies or any of them; and the commissioners shall hear the companies or any of them, and the Metropolitan Board of Works, and the Commissioners of Sewers, and other local authorities, if they desire to be heard.

Power to Obtain Assistance, &c.

16. The commissioners may obtain such legal and other advice and assistance as they think fit.

Majority to Bind.

17. Any decision or act of two of the commissioners shall be deemed the decision or act of the commissioners.

Report and Confirmation.

18. The commissioners shall within six months from their appointment, or within such further time as the Board of Trade from time to time allow, report to the Board of Trade on the matters referred to the commissioners; and if the scheme or schemes submitted by the companies, with any modifications which have been suggested by the Board of Trade, and which the commissioners report ought to be made, or the scheme or schemes framed and reported by the commissioners, is or are confirmed by order of Her Majesty in council, the same shall have full effect, and shall be as binding as if the same had been enacted by Parliament.

Number of Companies.

19. No scheme or schemes shall be confirmed by order in council unless provision is thereby made for an amalgamation of the companies into not more than four companies.

Provisions of Scheme for Compensation to Officers Removed.

20. Every chairman, director, auditor, secretary, engineer, accountant, and other officer, who shall be removed from the establishment of any of the thirteen companies included in this Act, in consequence of the amalgamation of his company with some other or others of the said companies, and shall not receive similar appointment of equal value in the aggregated company of which it shall become a part, shall be entitled to adequate compensation for the loss of his appointment, to be paid in gross or as an annuity by such aggregated company, and the amount of such compensation shall either be fixed in the scheme of the amalgamation or shall be determined by the President of the Board of Trade, regard being had to length of service and all the circumstances of the case.

Meaning of Company.

21. After any such amalgamation an amalgamated company shall be deemed to be a company within the meaning of the Act of 1860 and of this Act.

Sale of Copies.

22. Each amalgamated company shall at all times keep at their principal office printed copies of the scheme relating to the company, with the confirming order in council, and shall sell copies to all persons desiring to buy the same, at a reasonable rate, not exceeding sixpence for each copy. If any company fail to comply with this provision they shall be liable to a penalty not exceeding twenty pounds, and to a further penalty not exceeding five pounds for every day during which such failure continues after the first penalty is incurred.

METROPOLITAN GAS REFEREES.

Appointment of Referees.

23. The Board of Trade shall as soon as may be after the passing of this Act appoint three competent and impartial persons, one at least of them having practical knowledge and experience in the manufacture and supply of gas, who shall be called the Metropolitan Gas Referees (and who are in this Act referred to as the gas referees); and in case of a vacancy happening among them by death, resignation, or otherwise, may appoint a competent and impartial person to fill the vacancy, one at least of the three being always qualified as aforesaid.

Continuance of Referees.

24. The gas referees shall continue in office for one year from their appointment; and the Board of Trade may, if they think fit, at or before the expiration of that year, renew the appointment of them for any period not exceeding six months; and if at or at any time after the expiration of that period of six months it appears to the Board of Trade expedient to renew or revive the appointment of gas referees, they may renew or revive the same accordingly, for any period not exceeding three months, and so from time to time as occasion requires.

Quorum, &c., of Referees.

25. Two of the gas referees shall be a quorum, and at least two of the referees shall concur in every act or determination of the referees.

Certificates of Referees.

26. A copy of each certificate of the gas referees required by this Act shall be sent by them to the Metropolitan Board of Works and the Commissioners of Sewers, and to each of the companies.

TESTING FOR ILLUMINATING POWER AND PURITY.

Mode and Times of Testing Illuminating Power.

27. The gas referees shall, subject to the provisions of this Act, from time to time prescribe and certify the mode to be adopted for testing and recording the illuminating power of gas supplied by the companies, and the times of testing.

Examination of Gas-Works by Referees.

28. The gas referees shall, with all practicable speed after their appointment, and the gas referees for the time being may from time to time thereafter, inspect the works of the companies, and investigate the processes of manufacture carried on therein, with the view of ascertaining the means adopted therein for purifying gas and for preventing nuisance, and may from time to time apply all such tests as they think expedient, at the works of

the companies or elsewhere, for ascertaining the amount of sulphur and ammonia, and of compounds thereof, or other impurity with which gas supplied by them is charged.

Access to Works.

29. The companies shall give to the gas referees, and each of them, and to their clerks, servants, and workmen, access to the works of the companies, and shall, when required, afford to them and him all facilities for the proper execution of their and his duty.

Certificate of Maximum and Time.

30. The gas referees shall from time to time prescribe and certify the maximum amount of impurity in each form with which gas supplied by the companies shall be allowed to be charged, and the time from which the allowance thereof shall be enforced as against each company, regard being had to the necessity for any alteration of works by a company consequent on any such certificate.

Mode and Times of Testing Purity.

31. The gas referees shall from time to time prescribe and certify the mode to be adopted for testing and recording the purity of gas supplied by the companies, and the times of testing.

Freedom from Sulphuretted Hydrogen.

32. Gas supplied by the companies shall be wholly free from sulphuretted hydrogen, and nothing in this Act shall authorize the gas referees to allow of gas being charged with any amount of impurity in that form.

Provision of Testing-Places and Apparatus.

33. The gas referees shall from time to time prescribe and certify what testing-places and what apparatus therein for testing the illuminating power and purity of gas shall be provided by each company, every such place being as near as may be (but not less than) one thousand yards distant from the station from which the gas to be tested thereat is supplied, and each company shall provide and maintain such testing-places and apparatus accordingly, but so that not more than one testing-place be required for each station at which gas is manufactured.

Control, &c., of Testing-Places.

34. The prescribed testing-places and apparatus provided by the companies shall be under the control and management of the Metropolitan Board of Works or the Commissioners of Sewers.

Separate Testing-Place for Company.

35. The company providing a testing-place may also have a separate testing-place in the same building under their own control and management.

Appointment of Gas Examiner.

36. The Metropolitan Board of Works and the Commissioners of Sewers shall, as soon as may be after the passing of this Act, appoint, and shall always keep appointed, at least one competent and impartial person to be the gas examiner at each testing-place.

Appointment of Chief Gas Examiner.

37. There shall be a chief gas examiner, being a competent and impartial person, from time to time appointed by and removeable by the Board of Trade.

Daily Testing.

38. The gas examiner at each testing-place shall test daily the illuminating power and purity of gas supplied by the company.

Testings for Illuminating Power.

39. The testings of illuminating power shall be made three times at least each day between the hours of five o'clock and ten o'clock in the afternoon in the months of October to March, both inclusive, and between the hours of eight o'clock and eleven o'clock in the afternoon in the months of April to September, both inclusive; and nothing in this Act shall authorize the gas board to prescribe fewer testings than those directed by this section.

Illuminating Power for Day.

40. The average of all the testings of illuminating power prescribed by the gas referees on each day shall be deemed to represent the illuminating power on that day.

Representation of Company.

41. The company may, if they think fit, on each occasion of the testing of the gas by a gas examiner be represented by some officer, but such officer shall not interfere in the testing.

Daily Reports, and Access to Books.

42. Each gas examiner shall on each day make and deliver a report of the result of the testings conducted by him on the immediately preceding day to the Metropolitan Board of Works or the Commissioners of Sewers, and to the chief gas examiner, and to the company; and the books kept by a gas examiner for recording the results of the testings by him shall be open at all reasonable times to the inspection of the company without payment.

Appeal to Chief Gas Examiner.

43. If the company think themselves aggrieved by any report of a gas examiner, they may, within seven days after the day to which the report relates, appeal to the chief gas examiner, whose decision (after his hearing the parties) shall be final and conclusive; and the chief gas examiner shall report every such decision to the Metropolitan Board of Works and the Commissioners of Sewers.

Where no Appeal, Report of Examiner final.

44. If in any case the company do not appeal as aforesaid, the report of a gas examiner shall be final and conclusive.

ILLUMINATING POWER AND PRICE.

Illuminating Power (except for Cannel Gas).

45. The gas (except cannel gas) supplied by each company shall (subject to the provisions of this Act) be of an illuminating power, as follows:—

(1.) From the thirtieth day of September, one thousand eight hundred and sixty-seven, until the first day of January, one thousand eight hundred and sixty-nine (both exclusive), of an illuminating power of not less than fourteen candles;

(2.) On and after the first day of January, one thousand eight hundred and sixty-nine, of an illuminating power of not less than sixteen candles.

Maximum Price (except for Cannel Gas).

46. The maximum price chargeable by a company for gas (except cannel gas) shall (subject to the provisions of this Act) be as follows:—

(1.) Until the first day of January, one thousand eight hundred and sixty-nine, the maximum price chargeable by each company shall be the price actually charged by them on the first day of April, one thousand eight hundred and sixty-seven, but not exceeding in any case four shillings per one thousand cubic feet;

(2.) On and after the first day of January, one thousand eight hundred any sixty-nine, the maximum price chargeable by any company shall be at the rate of three shillings and ninepence per one thousand cubic feet.

Power for Reduction of Power and Price by Consent.

47. Provided, that the Board of Trade may before the first day of January, one thousand eight hundred and sixty-nine, on the recommendation of the gas referees, and with the consent of the companies and of the Metropolitan Board of Works and of the Commissioners of Sewers, substitute fourteen candles or fifteen candles for sixteen candles as the minimum illuminating power of the gas to be supplied by each company in the year one thousand eight hundred and sixty-nine, with a proportionate reduction of price at the rate of twopence halfpenny per candle, notice whereof shall be given in the *London Gazette*.

Price of Cannel Gas.

48. The maximum price chargeable by a company for cannel gas shall (subject to the provisons of this Act) be as follows:—

(1.) Until the first day of January, one thousand eight hundred and sixty-nine, the maximum price chargeable by each company shall be the price actually charged by them on the first day of April, one thousand eight hundred and sixty-seven, but not exceeding in any case five shillings and sixpence per one thousand cubic feet:

(2.) On and after the first day of January, one thousand eight hundred and sixty-nine, the maximum price chargeable by any company shall be at such rate per one thousand cubic feet as for gas of the illuminating power supplied by that company will be proportional to the price of three shillings and ninepence per one thousand cubic feet for sixteen-candle gas.

Application for Revision.

49. If in the month of January, in the year one thousand eight hundred and seventy, or any subsequent year, application is made to the Board of Trade by any company, or by the Metropolitan Board of Works, or the Commissioners of Sewers, for a revision of the scale of illuminating power and price, the Board of Trade shall appoint a competent and impartial person to be commissioner for the purpose.

Power and Price to be Fixed for Year.

50. The commissioner so appointed shall, after hearing the company, and the Metropolitan Board of Works, and the Commissioners of Sewers, if desiring to be heard, fix an illuminating power and a price for that company, to take effect as on and from the first day of January in the year of revision.

Rules for Fixing Power and Price.

51. In fixing the illuminating power and price for any company for any year the commissioner shall observe the following rules:—

(1.) He shall fix such an illuminating power and such a price as will enable the company with due care and management to make and divide in that year profits at the maximum rate of profits divisible under the Gas-Works Clauses Act, 1847, or any special Act of the company, on their paid-up capital or any part thereof, and to pay up the arrears of dividend (if any) to which the company are entitled under the said Act of 1847, as modified by the Act of 1860:

(2.) He shall not fix in any case an illuminating power lower or a price higher than the minimum of illuminating power and maximum of price prescribed by the Act of 1860:

(3.) Subject to the foregoing provisions, he shall fix the illuminating power as high and the price as low as circumstances admit.

If no Application, Power and Price to Remain.

52. If no such application for a revision of the scale is made in the month of January in any year, the scale of illuminating power and price shall remain unaltered for that year.

REPORTS OF CHIEF GAS EXAMINER.

Quarterly Report of Chief Gas Examiner.

53. Not more than three days after the end of each quarter the chief gas examiner shall make a report to the Metropolitan Board of Works and the Commissioners of Sewers on the results of the daily testings made in that quarter in connexion with each station of each company, and shall state therein with respect to gas supplied by each company from each station in that quarter:—

(1.) The illuminating power on each day:

(2.) The amount of impurity in each form on each day; and a copy of each such report shall within two days after the receipt thereof by the Metropolitan Board of Works or the Commissioners of Sewers be furnished by them to the company.

FORFEITURES.

Penalties for Defective Power or Excessive Impurity.

54. If on any three successive days at any time, or on any twenty or more days in any period of sixty successive days, the gas supplied by a company from any station is, according to the authoritative testings under this Act, of less illuminating power or of less purity than it ought to be under this Act, the company shall in each case of defective power, and in each case of excessive impurity, forfeit a sum of fifty pounds to the Crown, and the same, if not paid, shall be deemed a debt due from the company to the Crown, and shall be recoverable accordingly, with costs; and such forfeiture shall be borne and paid (to the satisfaction of the auditor appointed as in this Act provided) exclusively by and out of the profits of the company applicable to the purposes of dividend, and by way of reduction of dividend: Provided, that such forfeiture shall not be incurred in any case with respect to which it is certified by the chief gas examiner that the defect of illuminating power or excess of impurity was occasioned by an unavoidable cause or accident.

ACCOUNTS.

Auditor of Accounts.

55. There shall be an auditor of the accounts of the companies, being a competent and impartial person, from time to time appointed by and removeable by the Board of Trade.

Ascertainment of Capital of Companies.

56. The auditor shall with all practicable speed after the passing of this Act, investigate the accounts of the companies, and ascertain and certify the amounts of their capitals, distinguishing share from loan capital.

Form of Accounts.

57. The auditor shall from time to time prescribe a uniform form of accounts to be kept by the companies.

Periodical Audit.

58. The auditor shall half yearly audit the accounts of the companies, and if he finds the same correct he shall certify the same respectively, but if in any instance he finds the accounts incorrect in principle or in detail, he shall require the company to correct the same in such manner as he thinks right, and a dividend shall not in any case be declared otherwise than in accordance with the certificate of the auditor; and the accounts as certified shall be laid before both Houses of Parliament.

Facilities for Auditor.

59. Each company shall give to the auditor, his clerks and assistants, access to the books and documents of the company, and shall, when required, furnish to him and them all vouchers and information requisite for the purposes of the audit, and shall afford to him and them all facilities for the proper execution of his and their duty.

Arbitration between Auditor and Company.

60. If any company think themselves aggrieved by any act or determina-

tion of the auditor, the matter in difference shall be referred to the determination of an arbitrator agreed on between the company and the auditor, or, in default of agreement, appointed, on the application of either party, by the Lord Chief Justice of the Court of Common Pleas; and the reference shall be subject and according to the provisions of the Common Law Procedure Act, 1854; and the decision of the arbitrator shall be final and conclusive; and, subject to this provision, the companies shall observe and abide by the directions and determinations of the auditor.

MISCELLANEOUS AMENDMENTS.

Pressure of Gas.

61. All gas supplied by a company to a private customer shall (except in case of accident or repairs) be supplied at such pressure as to balance a column of water one inch in height at the exit of the meter in the customer's house, building, or lands supplied.

If a company fail in any case to comply with the requirements of this section, they shall, for each day on which they so fail, be liable to a penalty not exceeding ten pounds.

Governors for Street Lamps.

62. A company supplying gas to public lamps, or the local authority, may at their own expense cause to be affixed to each lamp the instrument known as a street-lamp governor, and the local authority or the company (as the case requires) shall be entitled to have access thereto for the purpose of examining the same; and in case any dispute arises between the company and the local authority with reference to the affixing, operation, or inspection of governors, the same shall be referred to the determination of the chief gas examiner, whose decision shall be final and conclusive.

Limit of Charge for Gas supplied to Public Lamps.

63. A company shall not charge a higher price per one thousand cubic feet for gas supplied to any local authority than the lowest price per one thousand cubic feet charged by them at the same time to any other local authority, or to any private customer.

Settlement of Differences by Arbitration.

64. Section thirty-eight of the Act of 1860 shall be read as if the Lands Clauses Consolidation Act, 1845, were therein mentioned instead of the Companies Clauses Consolidation Act, 1845.

Map of Mains to Show Diameter.

65. Each gas company shall cause to be marked in figures on the map which they are required to keep by section forty-two of the Act of 1860 the diameter in inches of all their mains or district mains laid under public streets and roads.

Deposit in Case of Dispute.

66. Where a dispute arises between a company and one of their customers respecting any payment to be made to the company, if the customer deposits with the company, by way of security, the amount claimed by them, it shall not be lawful for the company to discontinue a supply of gas to the customer by reason of the dispute.

EXPENSES OF EXECUTION OF ACT.

Remuneration and Expenses of Gas Referees, &c.

67. The remuneration of any commissioners appointed by the Board of Trade under this Act, and of the gas referees, and of the chief examiner, and of the auditor, shall be such as the Board of Trade from time to time direct, and the same and all expenses properly incurred by them in or about the execution of their duties shall be paid by the companies, and shall be from time to time apportioned by the Board of Trade among the companies in proportion to the nominal amount of their share capitals; and the amount so apportioned to each company shall be paid by the company, on demand, to such fund or account, and in such manner, as the Board of Trade from time to time direct, and shall be a debt due from the company to the Crown, and shall be recoverable accordingly, with costs.

Remuneration and Expenses of Gas Examiners.

68. The remuneration of the gas examiners, and all expenses incurred by them in executing their duties, shall be paid by the Metropolitan Board of Works or the Commissioners of Sewers, as part of the expenses of the execution of the Acts relating to those bodies

COSTS.

Expenses of Act.

69. All costs, charges, and expenses preliminary to and of and incidental to the preparing, applying for, obtaining, and passing of this Act shall be paid by the Metropolitan Board of Works, as the Board of Trade direct.

The SCHEDULE to which the foregoing Act refers:—

SCHEDULE.

Parts of Metropolis Gas Act, 1860, *repealed*.

Sections seven to twelve, both inclusive;
Sections twenty-five to thirty-four, both inclusive;
Section thirty-seven;
Sections forty and forty-one.

Miscellaneous News.

LIST OF PRIZES AWARDED TO THE EXHIBITORS IN THE DIFFERENT BRANCHES OF GAS INDUSTRY AT THE UNIVERSAL EXHIBITION OF 1867.

GRAND PRIZE.

Class 51.—C. W. Siemens (England), Regenerative gas-furnace.

GOLD MEDALS.

Class 24.—R. W. Winfield and Co. (Birmingham), Gas fittings.
Class 40.—Boigues, Rambourg, and Co. (Paris), Castings.
Pinart and Co. (Marquise), Castings.
Class 44.—The Paris Gas Co., Products obtained from ammoniacal liquor, tar, and their derivatives.
J. Carthelaz (Paris), Aniline.
Société de la Fuschine (Lyons), Aniline.
R. Knosp (Stuttgard), Aniline.
Meister-Lucius and Co. (Prussia), Aniline.
G. Wagenmann (Vienna), Paraffin candles.
B. Hubner (Prussia), Paraffin candles.
J. Young (England), Paraffin candles.
Class 53.—N. A. Otto and E. Langen (Cologne), Gas-engine.

SILVER MEDALS.

Class 24.—Audouin and Bérard (Paris), Researches upon gas lighting, and experimental gas lighting apparatus.
Chabrié Brothers (Paris), Gas-fittings.
Schaeffer and Walker (Berlin), Gas-fittings.
Spinn and Son (Berlin), Apparatus for oil and gas.
Benham and Son (London), Heating and lighting.
Lecoq Brothers (Paris), Gas-fittings.
Bengel (Paris), Apparatus for lighting and heating by gas.
Class 24.—Gaudineau, Valle, and Co. (Paris), Gas-fittings.
The Paris Gas Company, Coke-heating apparatus.
Class 40.—Lloyd and Lloyd (Birmingham), Iron tubes.
John Russell and Co. (London), Iron tubes.
Mignon, Rouart, and Delinières (Paris), Welded iron tubes, and connexions.
L. F. Vicaire (Paris), Copper and brass tubes.
Gandillot and Co. (Paris), Iron tubes and connexions.
Class 44.—Tillmanns (Crefeld), Colours derived from aniline.
Demuth and Co. (Birmingham), Benzine, toluine, &c.
J. R. Geigy (Bâle), Aniline colours.
Weiler and Co. (Cologne), Products extracted from tar, aniline, and benzine.
H. Vedlès and Co. (Clichy-la-Garenne), Benzine, nitrobenzine, analine, and violet.
Bayer and Co. (Prussia), Aniline colours.
Coblenz Brothers (Paris), Products derived from tar, and analine
G. Dehaynin (Paris), Products derived from tar.
Jaeger (Prussia), Aniline colours.
Class 51.—L. Bousquet and Co. (Lyons), Clay gas-retorts.
Société Anonyme d'Andennes (Belgium), Fire-clay goods.
The Paris Gas Company, Fire-clay retorts and goods.
H. L. Vygen and Co. (Prussia), Fire-clay goods.
V. Wiessnegg (Paris), Laboratory gas apparatus.
H. Girond (Paris), Gas-regulator.
A. Richter (Austria), Fire-clay goods.
Class 52.—The Paris Gas Company, Gas-engines.
Class 53.—Brunt and Co. (Paris), Gas-meters.
G. Glover and Co. (London), Dry gas-meters and gasholders.
Thomas Glover (London), Dry gas-meters.
P. Hugon (Paris), Gas-engines.
Siry-Lizars and Co. (Paris), Gas-meters.

BRONZE MEDALS.

Class 24.—Elster (Berlin), Gas-fittings.
Philp (Birmingham), Gas-lustres.
Schwartz (Nuremberg), Steatite burners.
Isaura (Barcelona), Apparatus for lighting with gas or oil.
Bonnard (Paris), Gas lighting.
The Widow Collin (Paris), Gas-fittings for schools of design.
Gœlzer (Paris), Gas lighting.
Jacquet (Paris), Heating by gas.
Williams (Paris), Heating by gas.
Schwemmer (Nuremberg), Steatite burners.
Leoni (London), Silicate of magnesia burners.
Brisson and Co. (Paris), Gas-burners of different kinds.
Freville (Paris), Gas-fittings.
Class 40.—P. Lamal and Co. (Brussels), Lead and tin pipes.
Cambiaggio (Italy), Iron tubes.
Class 44.—Kalle and Co. (Prussia), Analine colours.
Vilté and Co. (Bakou, Russia), Paraffin.
Ignaz Rigler (Pesth, Hungary), Paraffin.
G. Dollfus (Bâle, Switzerland), Analine colours.
J. H. Diss-Debar (United States), Paraffin.
Société Rhenane pour l'Eclairage (Cologne), Paraffin.
The Polish Candle Factory (Pesth), Paraffin.
The Belmont Oil Company (Philadelphia), Paraffin.
Othon Bredt and Co. (Prussia), Aniline colours.
Lambe and Sterry (London), Paraffin and candles.
Class 51.—J. T. B. Porter and Co. (England), Production of gas from petroleum.
E. Muller and Co. (Ivry), Fire-clay goods.
H. Jousseaume (Ivry), Fire-clay goods.
Dalifol and Huet (Paris), Fire-clay goods.
Berger, Cadet, and Son (Bollène), Pipes for gas and water.
J. Donny (Ghent), Gas-stove.
L. Souzée (Belgium), gasholder.
The Hoganaes Works (Sweden), Fire-clay goods.
Jouanne (Paris), Manufacture of illuminating gas.
The Widow Fuisseaux (Belgium), Fire-clay goods.
A. Perrot (Geneva), Gas-furnace for melting metals.
Class 53.—N. Defries (London), Dry gas-meters.
The Gas-Meter Company (London), Gas-meters.
H. Girond (Paris), Gas-regulator.
G. Lefebvre (Paris), Gas-engines.
W. Sugg (London), Gas-meters and apparatus.
West and Gregson (England), Gas and water meters.
J. G. Garnier and Co. (Paris), Gas-regulator.
Class 65.—Chameroy and Co. (Paris), Bitumenized pipes.
Pinart and Co. (Marquise), Pipes and castings.

HONOURABLE MENTION.

Class 24.—Best and Hobson (Birmingham), Gas-fittings.
Monier (Paris), Glass burners.
D. Robert (Paris), Gas-fittings.
Strode and Co. (London), Gas lighting.
Forrest and Co. (London), Gas lighting.
Denis (Arras), Heating by gas.
Glover (London), Gas-fittings.
Freeman (London), Gas illuminations.
Defries and Co. (London), Gas illuminations.
Class 40.—Vialette and Boutier (Paris), Drawn metal tubes.
Class 44.—J. Rutgers (Berlin), Products from tar.
T. and C. Holliday (New York), Aniline colours.
Class 51.—Sugg and Co. (Ghent), Fire-clay goods.
Baradal (Paris), Making gas from tar.
The General Gas Company (portable gas), Lighting of carriages.
G. Bower (England), Gas apparatus and fittings.
J. Cliff and Son (England), Fire-clay goods.
Planckh Brothers (Austria), Fire-clay bricks.
W. J. Baker (England), Apparatus for gas-works.
J. Wilson (London), Hydraulic gas-valves.
Class 53.—Achard and Simon (Paris), Pressure-regulator.
N. Bautier de Mongeat (Parma), Compensating pressure-gauge.
Ciervo and Co. (Barcelona), Gasholder.
The London and Westminster Meter Company (London), Meters for gas and water.
Duckham (England), Gas-meter.
S. Elster (Berlin), Gas-meter.
Newton and Braddock (England), Dry meters.
J. Williams (Paris), Gas-meters.
Class 65.—H. Marini (Paris), Pipes and joints.

GAS-WORKS MANAGER.

WANTED, a person to reside abroad who can undertake the MANAGEMENT of a gas-work already established. It is necessary that he thoroughly understands the work in all its branches, and has some knowledge of book-keeping.

Apply by letter to G. M., care of Messrs. Lowe and Oliphant, 47, THREADNEEDLE STREET.

MERE GAS-WORKS.

WANTED, a Stoker and General MANAGER. He must understand retort setting and repairing meters, and have a knowledge of fittings. He will have to do the entire work. There are 3 retorts, and under 100 consumers of gas.

Apply, stating salary and with references, to the undersigned.

J. FARLEY RUTTER, Secretary.

Postal address—Mere, near Bath.

TO GAS COMPANIES, ETC.

FOR SALE, 1 Cast-Iron Condenser BOX, 8 ft. by 2 ft.; 16 5-in. Pipes, 9 ft. long; a 4-in. Hydraulic Four-way Valve. Also 1 Cast-Iron Tank, 21 ft. diameter, 10 ft. deep, complete, with bolts and a wrought-iron cover. The whole in good condition.

For further particulars, apply to the MANAGER of the Gas-Works, ST. ALBAN'S.

MANAGER OR SECRETARY.

A GENTLEMAN who has had considerable experience in the construction and management of gas and water works, is desirous of meeting with an ENGAGEMENT to take charge of works either in this country or abroad. Has a thorough knowledge of French, and has already been out in the East.

Address, by letter, to P. M., Auction and Estate Agent's Offices, 114, FENCHURCH STREET, E.C.

A Regularly bred Engineer, who has had considerable experience in various branches of the profession, and is a good draughtsman, offers his services as DRAUGHTSMAN or otherwise in a gas-works. Has been some time in a large gas-works in the north, and can give excellent references as to character and ability. A moderate salary will be accepted, as the chief object is further experience in gas-making.

Address F. L., 2, Elm Cottages, Woodlands, EAST GREENWICH.

CONDENSER required with 6-in. connexions, fixed at the Gas-Works, Barking, Essex. Cash price fixed complete.

Drawing and specification to be sent to D. HULETT, 55, HIGH HOLBORN.

GAS TAR.

FOR SALE, at the Weymouth Gas- Works, a large quantity of TAR, upwards of 100,000 gallons.

Tenders for same to be sent to ROWLAND THOMAS, Esq., Chairman of the Company, WEYMOUTH.

FOR SALE, 2 sets of 4 Cast-Iron Dry- Lime PURIFIERS, 15 ft. by 11 ft., and 3 ft. deep, with hydraulic centre-valves for 12-in. connexions and malleable iron trays.

Also 2 Cast-Iron Dry-Lime PURIFIERS, 14 ft. by 8 ft. 8 in., and 3 ft. deep, with wood trays.

The above are being sold in consequence of larger ones being substituted, and may be seen by applying to J. ARNOTT, the Leeds New Gas-Works, Meadow Lane, LEEDS.

Leeds, July 19, 1867.

TO GAS COMPANIES AND ENGINEERS.

FOR SALE.—A Good Cast-Iron Tank, in excellent condition, 45 feet diameter, 14 feet deep, either with or without Gasholder.

Also the following STATION-METERS:—

One	,,	8,000	,,	,,
One	,,	4,000	,,	,,
Two	,,	3,000	,,	,,

The whole have been taken apart, thoroughly examined, and are in good working order, equal to new.

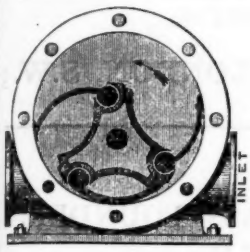
The above have been taken down to make room for larger.

Apply to JOHN VICKARY, Gas Engineering Works, EXETER.

BALANCE-SHEETS AND REVENUE ACCOUNTS

A FIRM of Accountants, much engaged in the preparation of Gas Companies Accounts, are open to contract for the keeping, balancing, or auditing the books of other Companies, which, from their experience, they are enabled to do on moderate terms.

Address, SANDELL & MADDERS, Accountants, 4, Skinner's Place, Size Lane, LONDON, E.C.



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Retort Mouthpieces, Bolts, Nuts, and every description of Wrought-Iron Work.

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Gas Companies supplying districts with varying levels can, by the use of this Governor (which is entirely new in principle), assimilate the pressures in the higher to that in the lower levels, and so materially reduce their leakage accounts. It is self-acting, simple, and certain, *increasing and reducing the pressure as required.*

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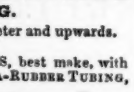

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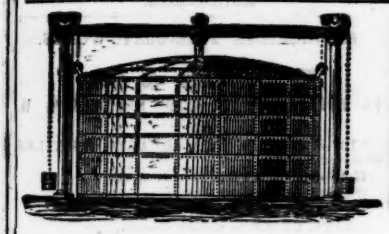

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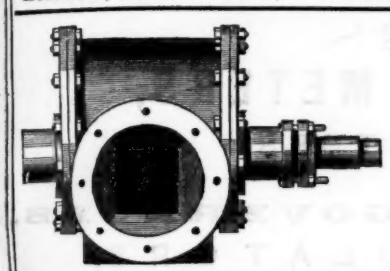

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